### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE PATENT EXAMINING OPERATION

ATTN'Y DOCKET NO .: ETS-TCA

'APPLICATION OF: PETER BRITTINGHAM, MARY E. MORLEY, MARK K.

SINGLEY, MARK G. ZELMAN, KRISHNA N. JHA, JAMES H. FIFE, ROBERT L. RARICH, IRVIN R.

KATZ, RANDY E. BENNETT

FOR: COMPUTER-BASED TEST-ITEM GENERATION AND

CLONING

#### DRAWINGS

(FIGS. 1-73, 73A-73E, 74-79, 80A-80C, 81, 82A-82C, 83-97, 98A-98B, 99-105, 106A-106B, 107)

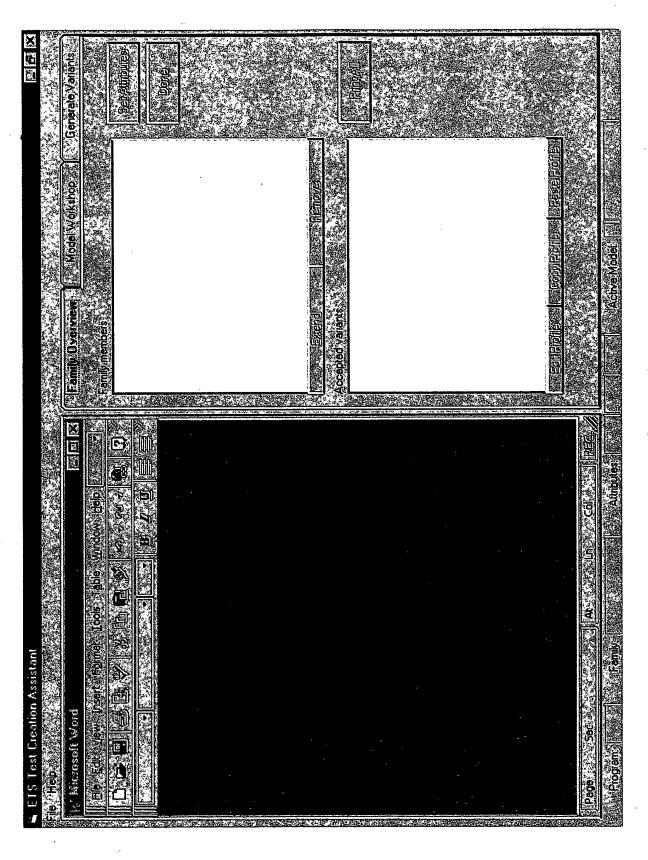


FIG. 1

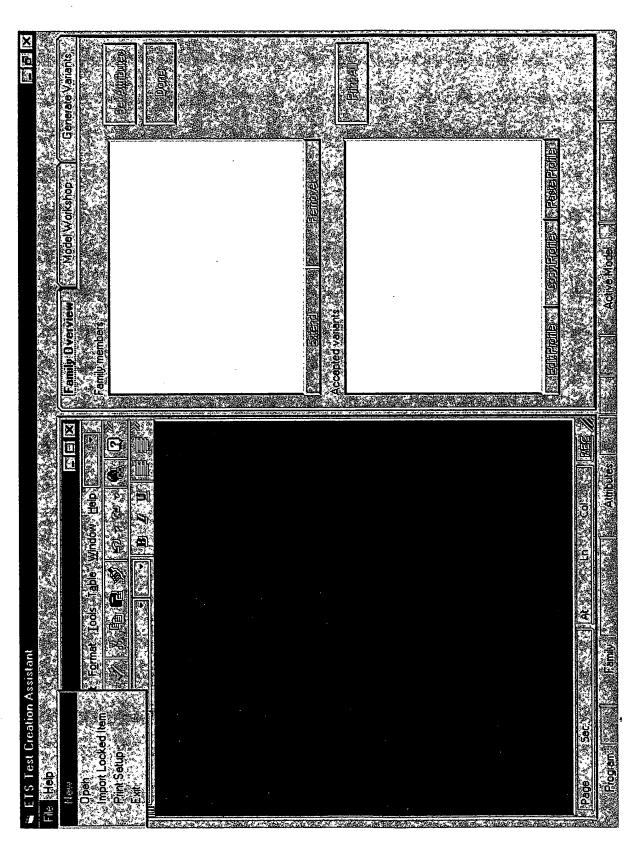


FIG. 2

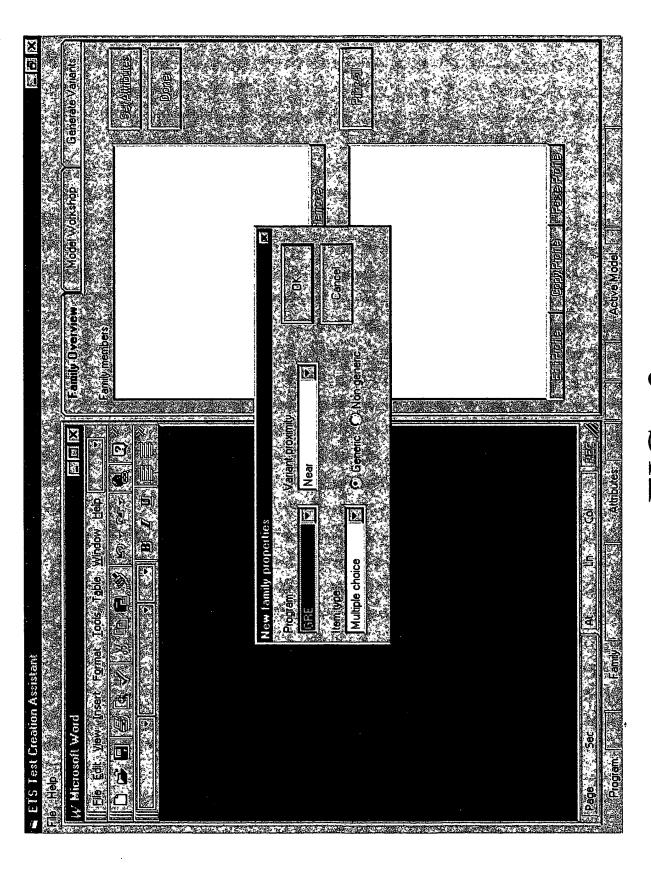


FIG. 3

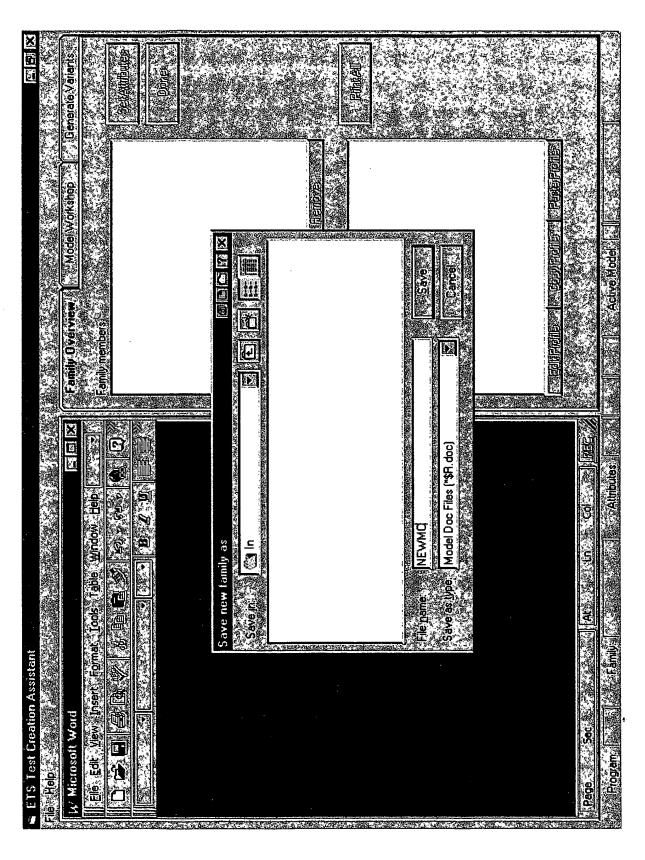


FIG. 4

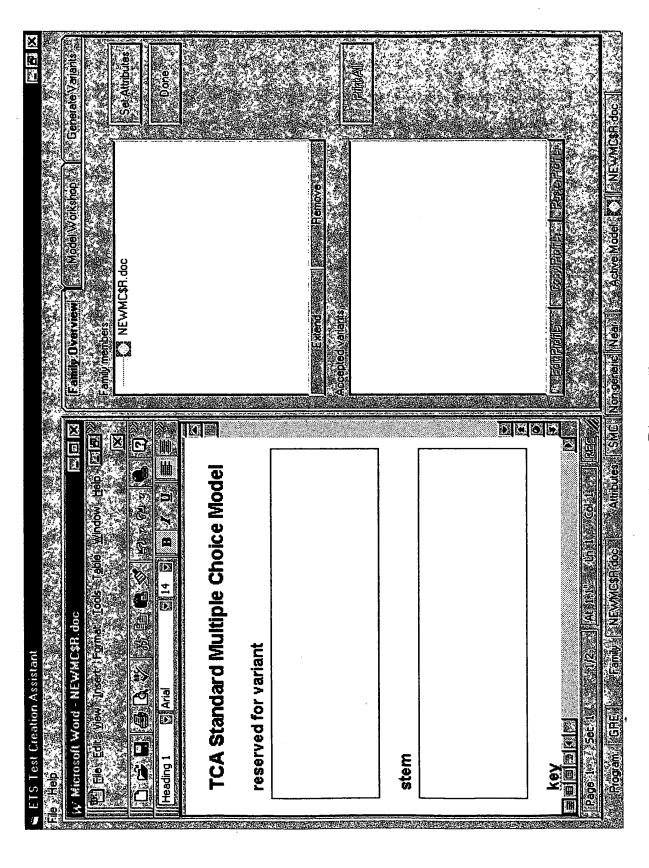


FIG. 5

Scratch Pad Area

#### **TCA Standard Multiple Choice Model** reserved for variant stem key Key distractor1 Distractor1 distractor2 Distractor2 distractor3 Distractor3 distractor4 Distractor4 distractor5 Distractor5 distractor6 Distractor6 distractor7 Distractor7 distractor8 Distractor8 scratch pad

### FIG. 6

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ETS Test Creation Assistant	· · · · · · · · · · · · · · · · · · ·	Wicrosoft Word - NEWMC\$R.doc	Edit. Yow Insert Format Ioois Table Window Heb			TCA Standard Multiple Choice Model	reserved for variant	stem	If John has 5 apples and Mary has 6 apples, how many apples do they have together?	KeX	Key	distractor1	Distractor1	2		Elodiam (GBE) Camib (NEWMC\$B) DOC

FIG. 7

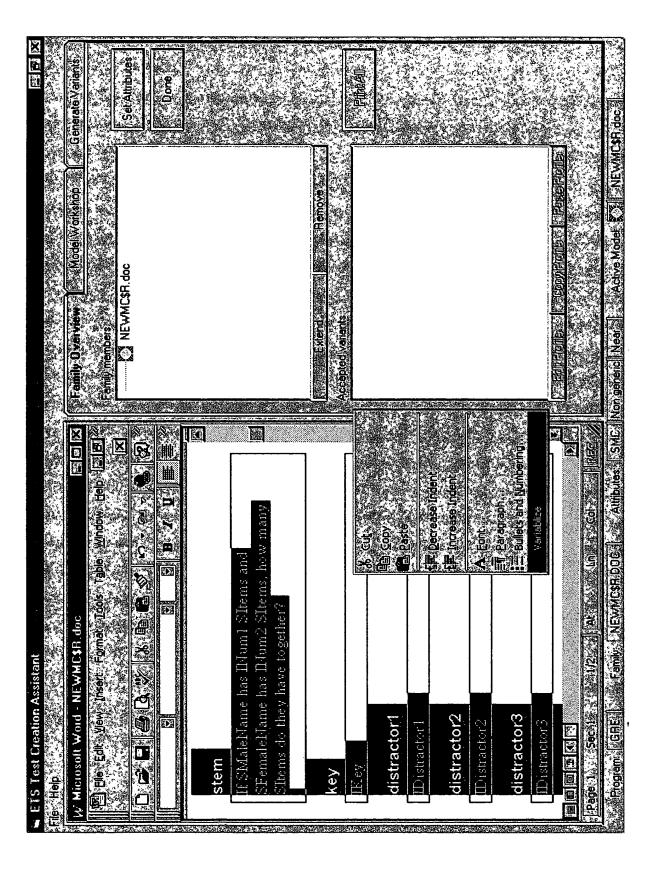
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	Family Overview.   Model Workshop   Generale Varients:	Familymembers	Sanding Control of the Control of th	Done			Management of the second secon	Accepted warrants				K TERRENDE I BODDIRONE I KREVERANDE		Attributes   SMC   Notigerate   Near   Active Mode     NEWMCSH doc
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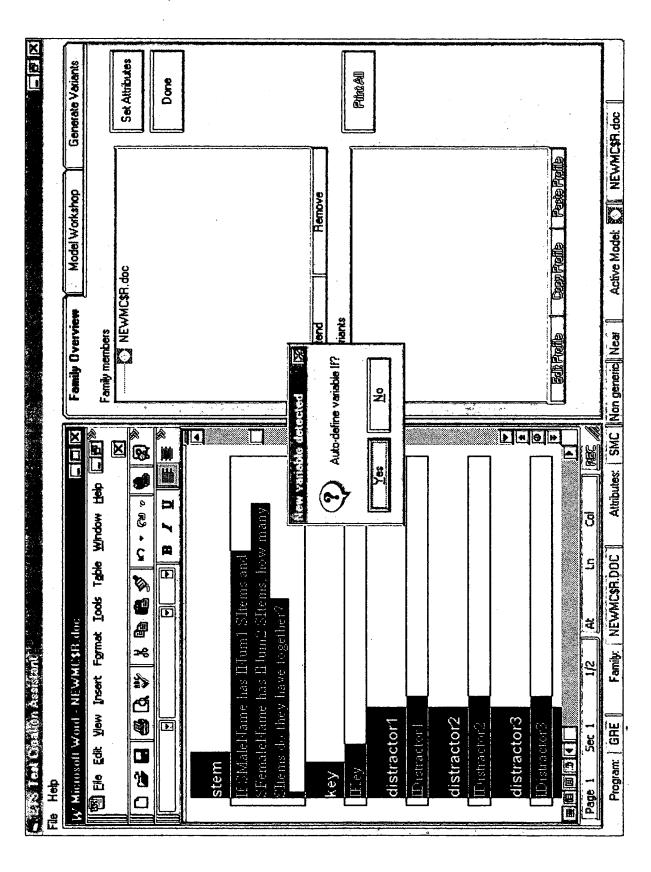
FIG. 8

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FIG. 9



# FIG. 10



# FIG. 11

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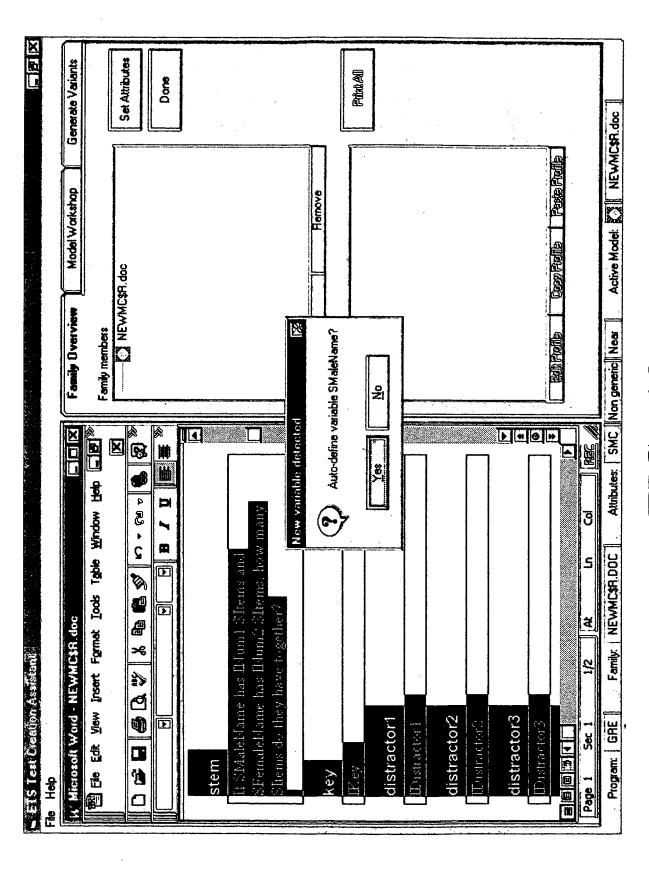


FIG. 12

	Family Overview Model Workshop Generate Varients	Veriables	SMaleName(C, 1,R); String, in [] Save Model	Stems(C, 1,R): String, in []	SFemaleName(C, 1,4); String, in [] Test All N INum2(C): Int	Wilkey(C): Int	onstraint. Then right button c	Variation Constraints	Print	Comments	The second secon	Add   Edit   Remeve   Test	Distractor Constraints				Add Edft Hemove Test		
File Help	W. Microsoft Word - NEWMC\$R.doc	Well Eile Edit Yjew Insert Format Iools Table Window teh LIDI®					stem		Sitems do they have together?		TK ev	distractor1	Distractor1	distractor2	Distractor2	distractor3	Distractor3		

FIG. 13

	Family Overview Model Workshop Generate Variants	Variables	State Add Save Model	Stlems(C, 1,R): Sting,  SfemaleName(C, 1,R): Remove All  Nump(C): Let All	드	Edit   Control	Print Constraints	Comments		Add   Edit   Remove   Test	Distractor Constraints				Add   Edit   Remoye   Test		SMC Non generic Near Active Model: T. NEWMCSR.doc
= ETS Test Creation Assistant File Help	W. Hicrosoft Word - NEWMC\$R.doc	The Edit Yew Insert Format Iools Table Window Help			stem	If SMaleName has INum! SItems and SFemaleName has INum? SItems, how many	Sitems do they have together?	Key	IK.E.Y	distractor1	Distractor1	distractor2	Distractor2	distractor3	Distractor3		Program: GRE Family: NEWMC\$R.DOC Attributes: SMC N

FIG. 14

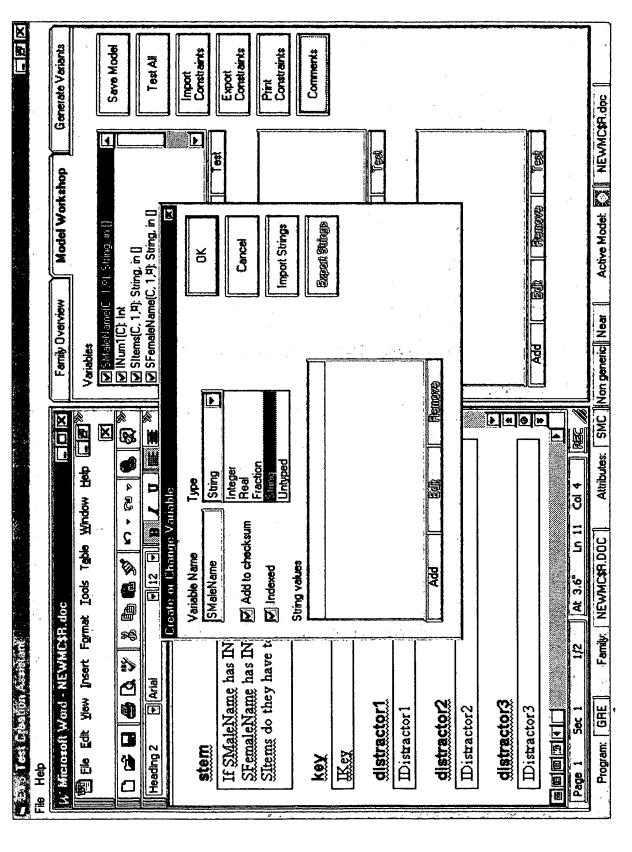


FIG. 15

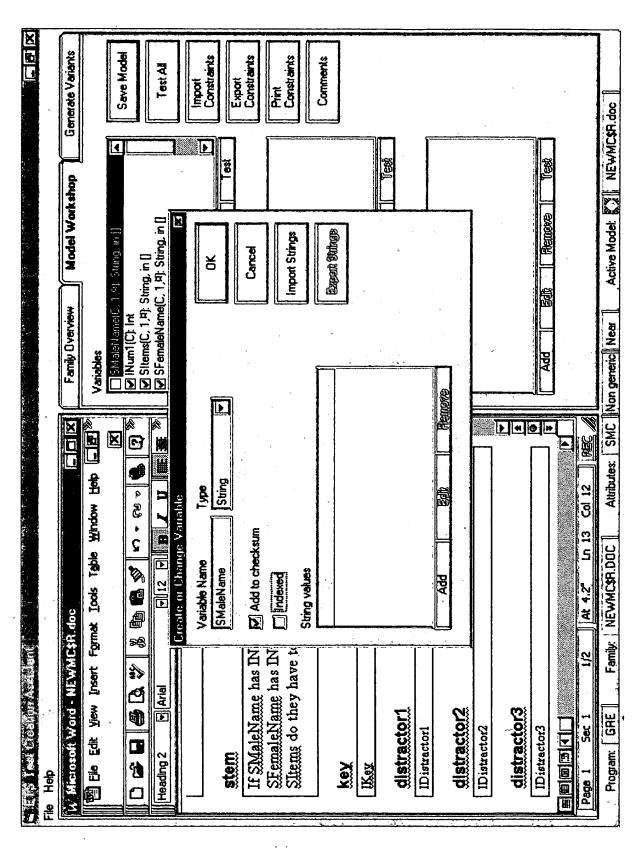


FIG. 16

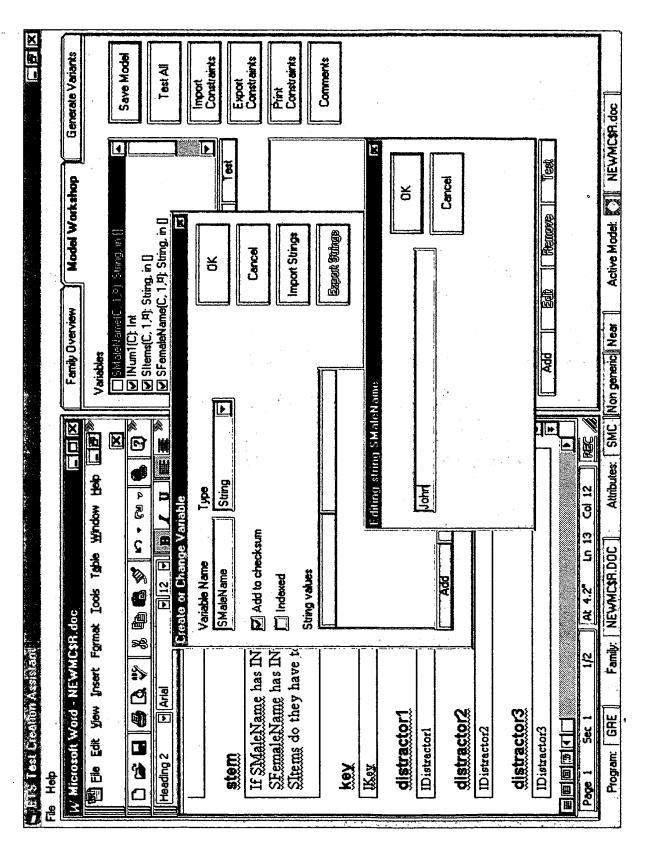


FIG. 17

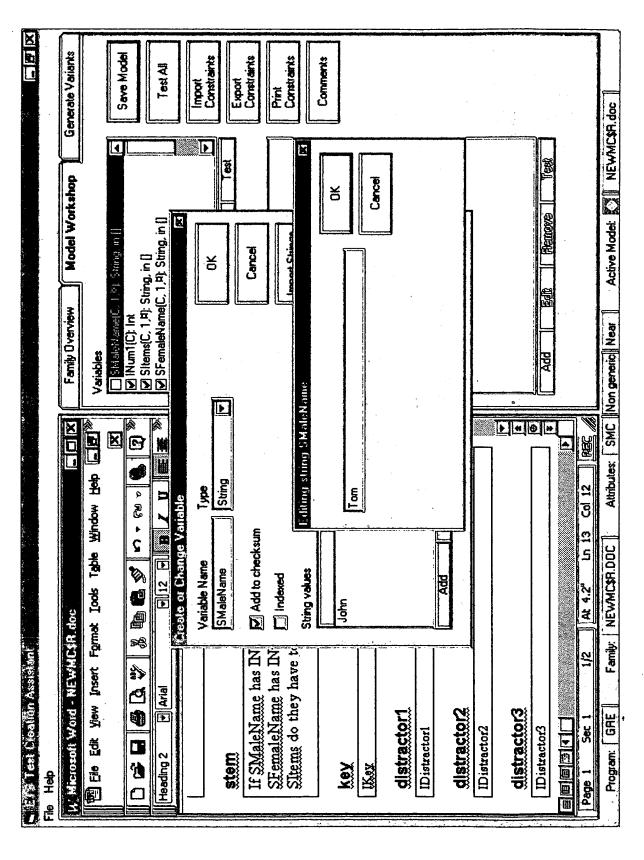


FIG. 18

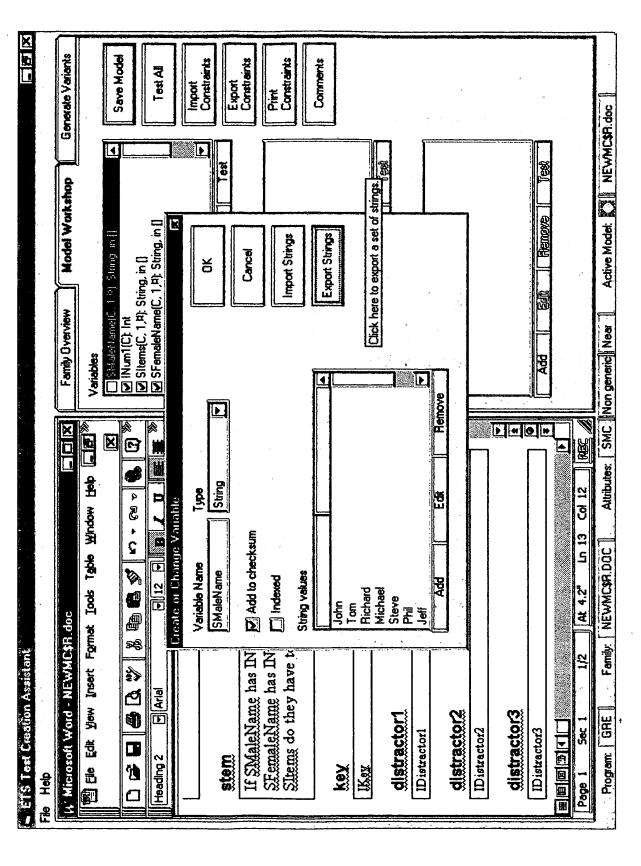


FIG. 19

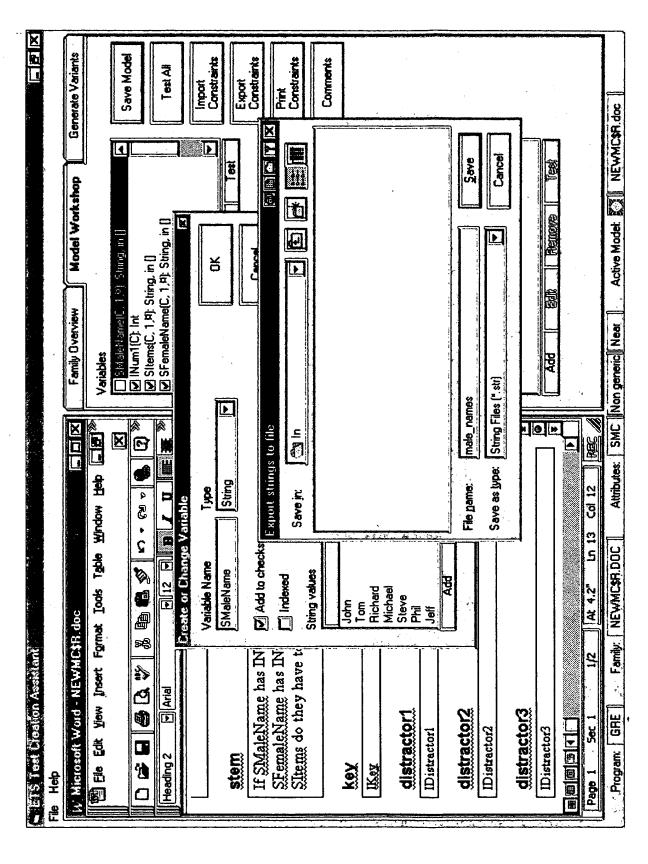


FIG. 20

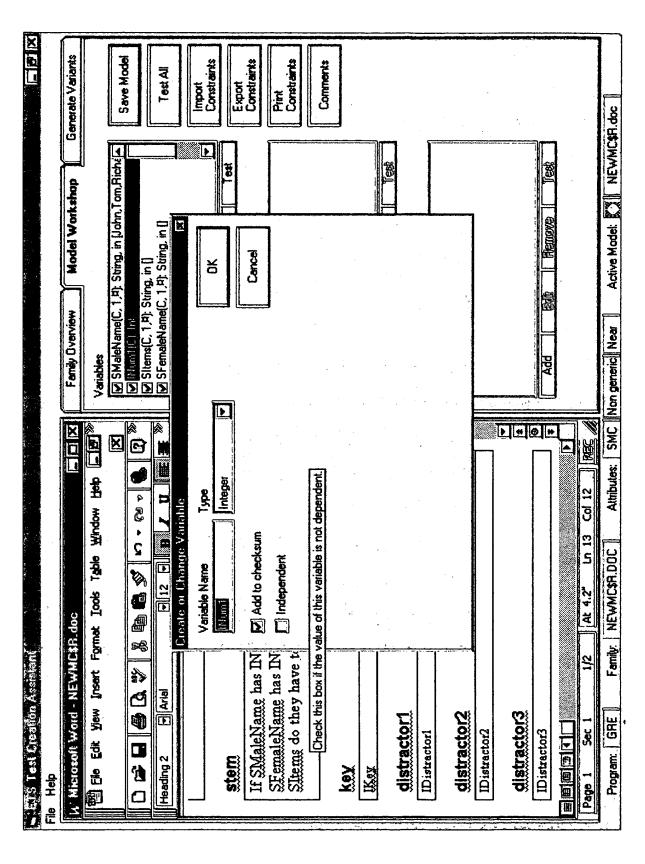


FIG. 21

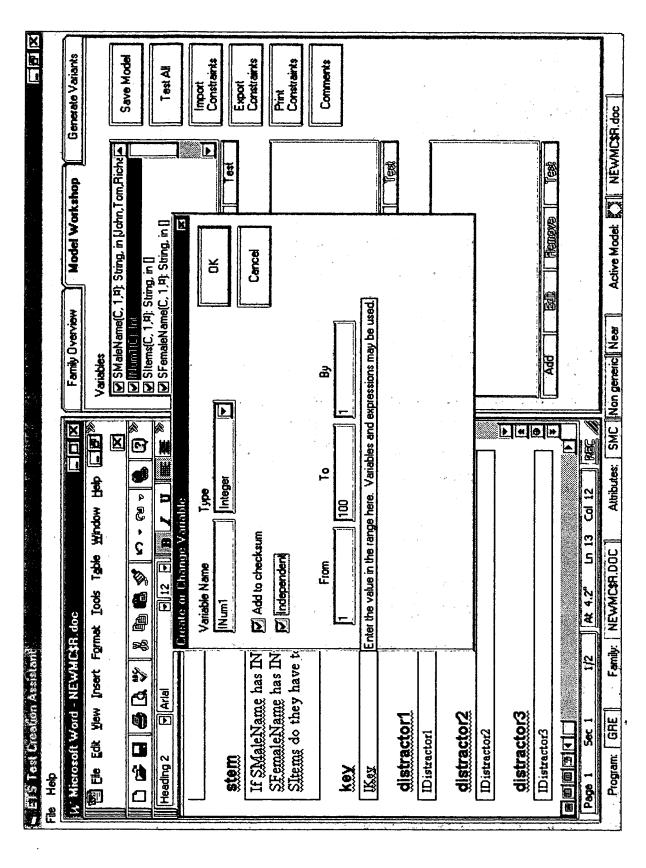


FIG. 22

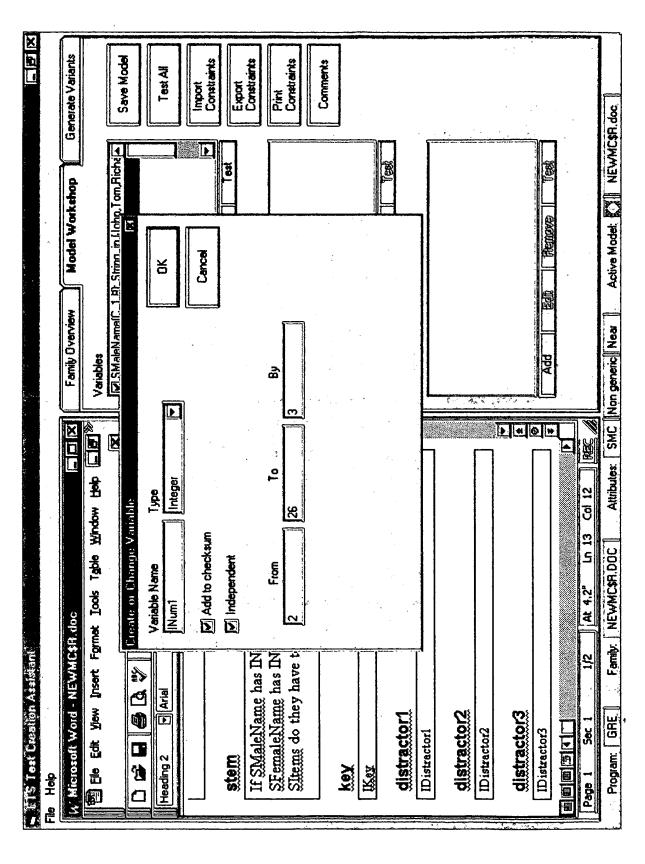


FIG. 23

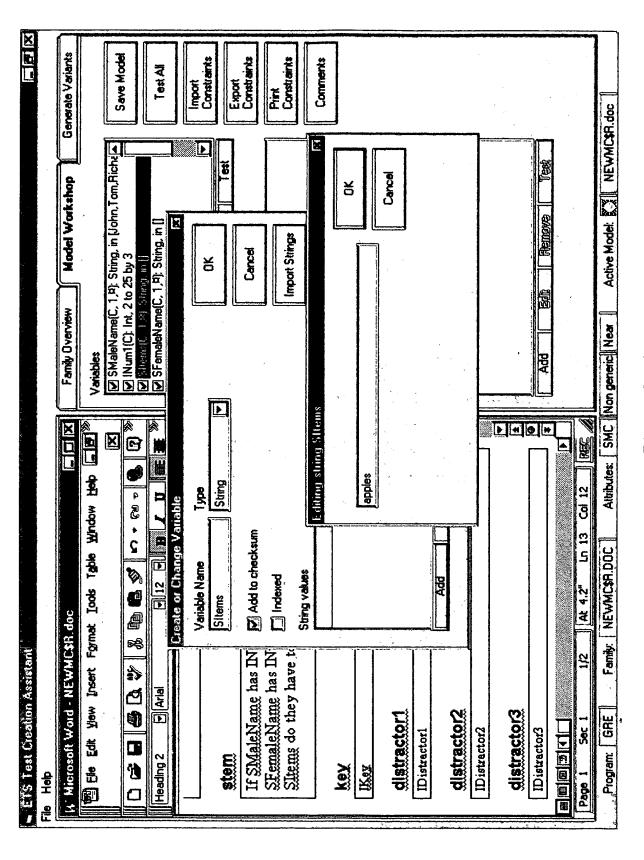


FIG. 24

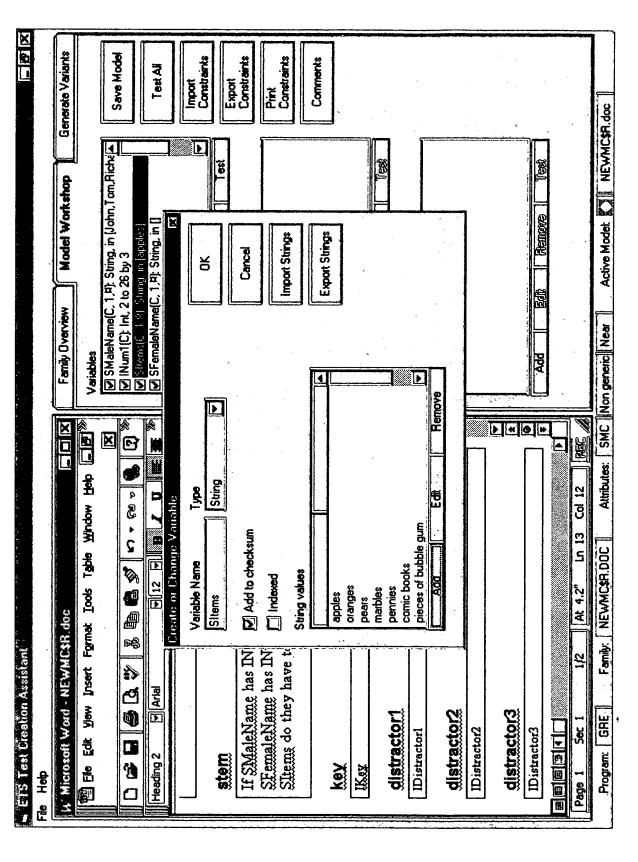


FIG. 25

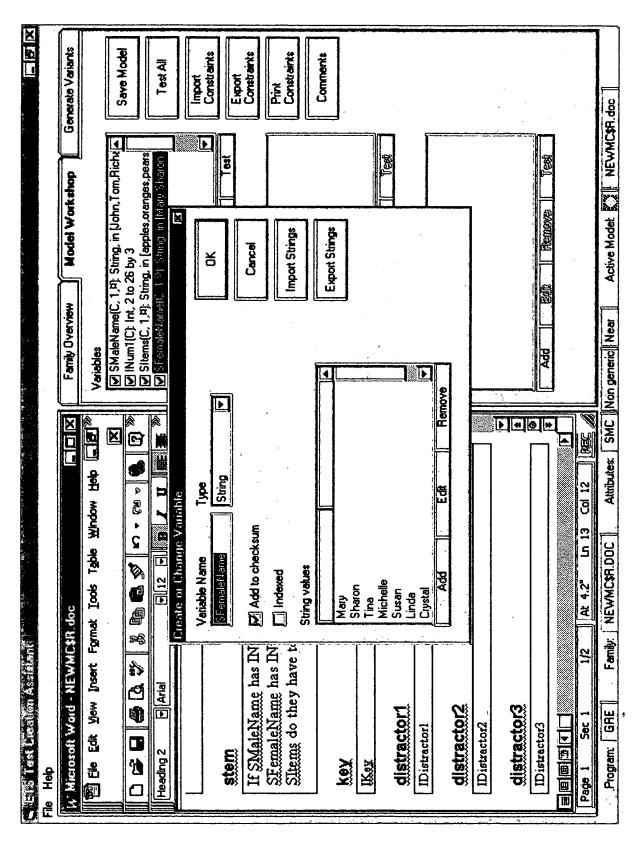


FIG. 26

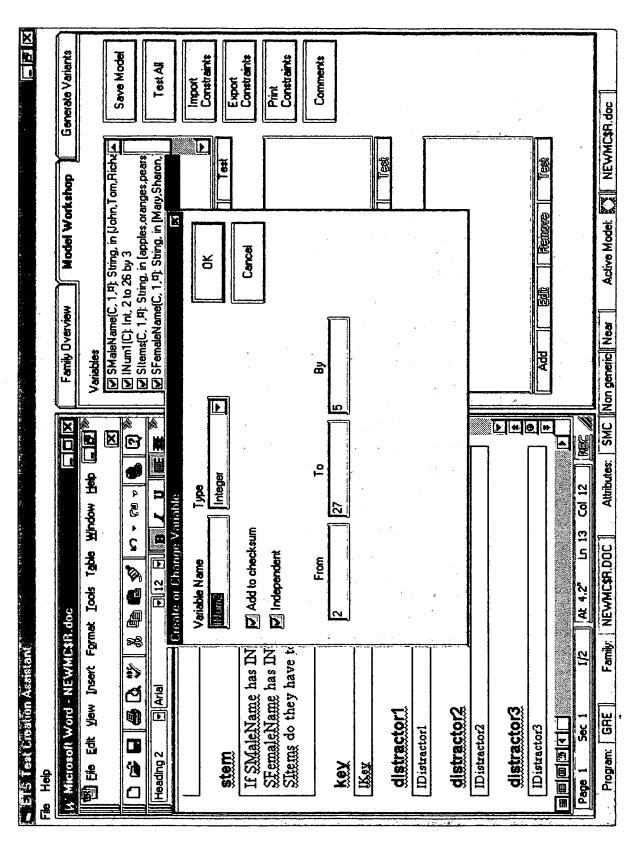


FIG. 27

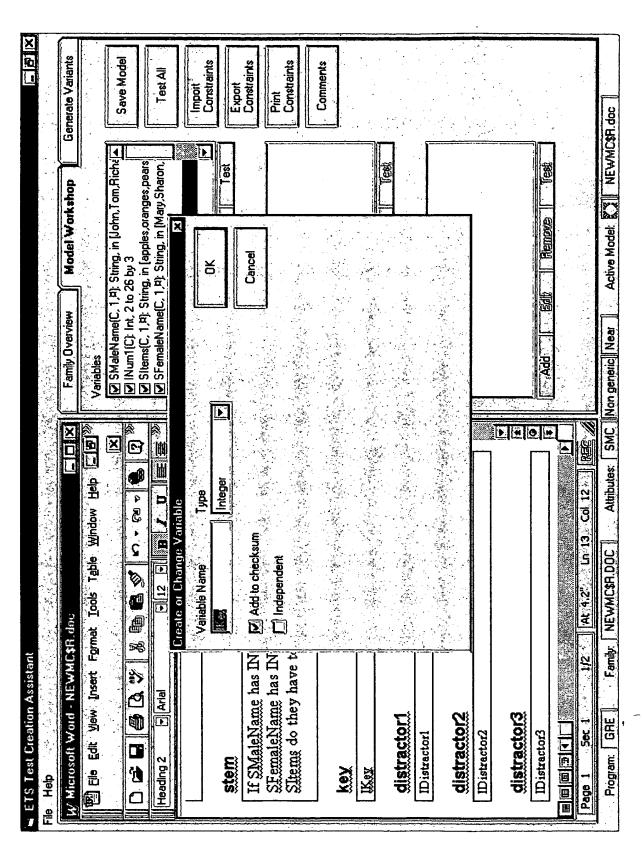


FIG. 28

Iooks Table Window Help [二百]※	Family Overview  Aniables  SremaleName(C, 1, #): String, in [Mary,Sharon,]  Name(C): Int, 2 to 27 by 5	Generate Variants
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IDistractor3	Edit   Remove   Test	

FIG. 29

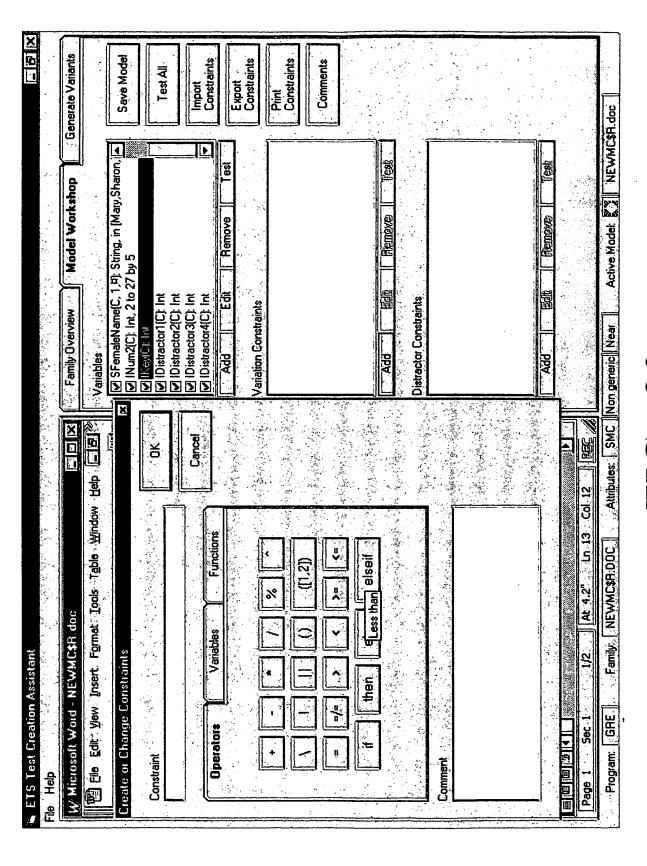


FIG. 30

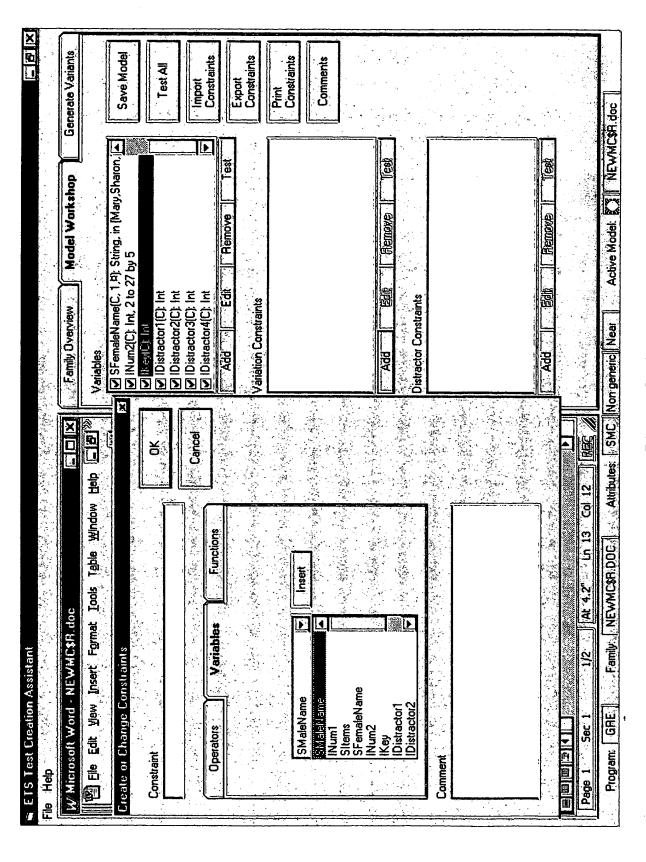


FIG. 31

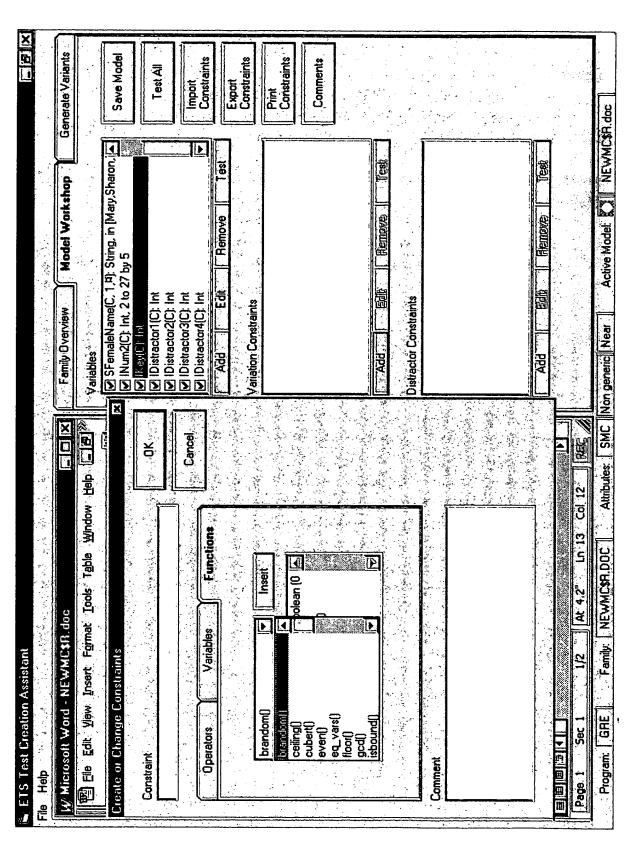


FIG. 32

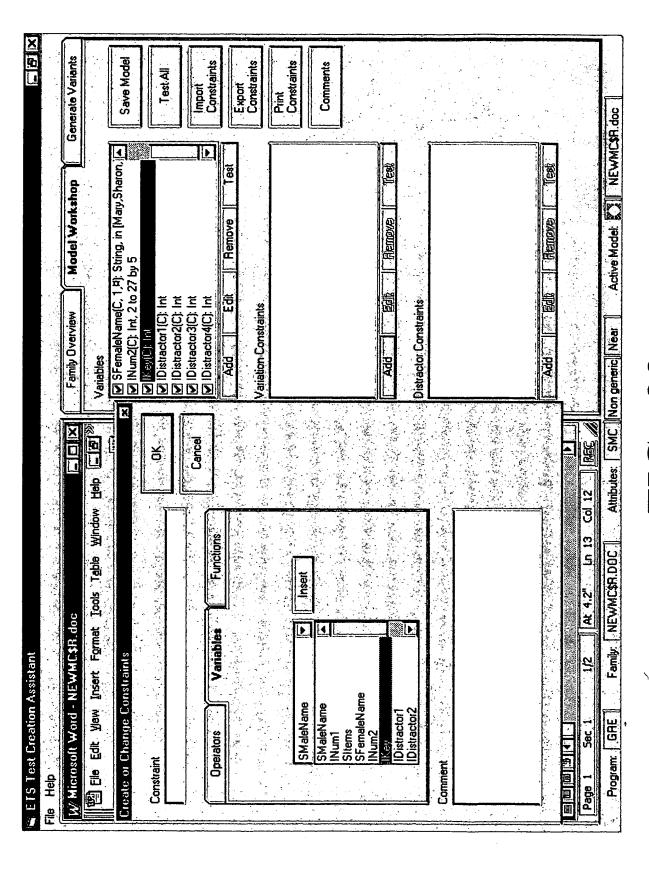


FIG. 33

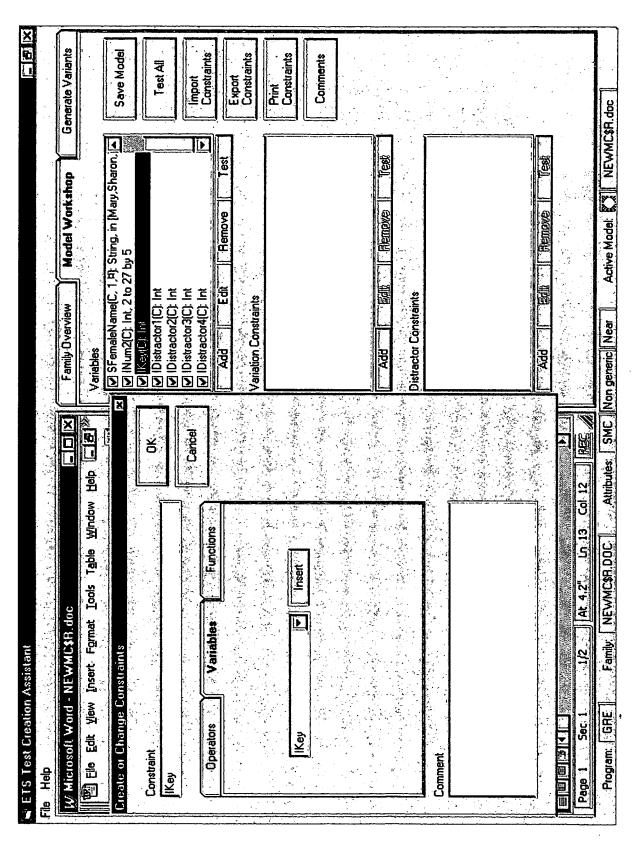


FIG. 34

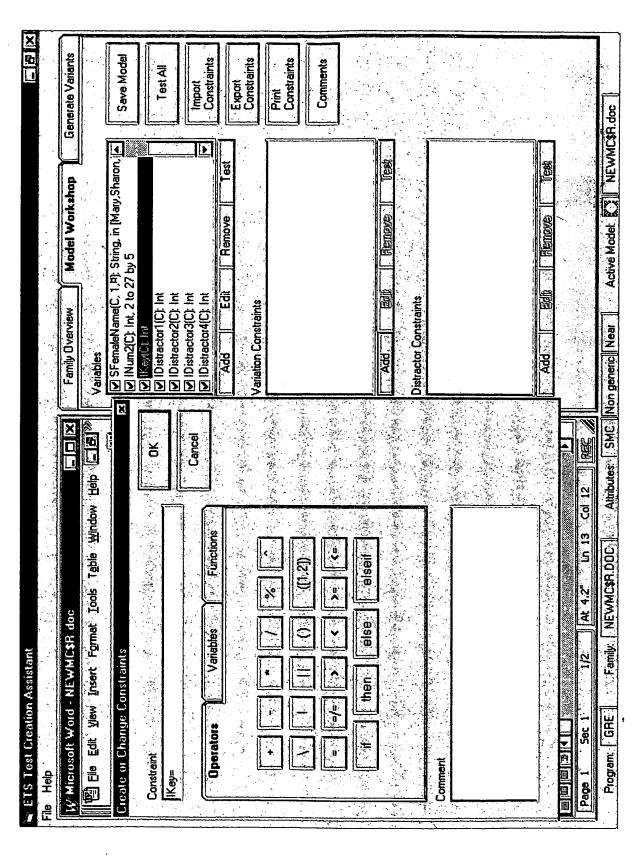


FIG. 35

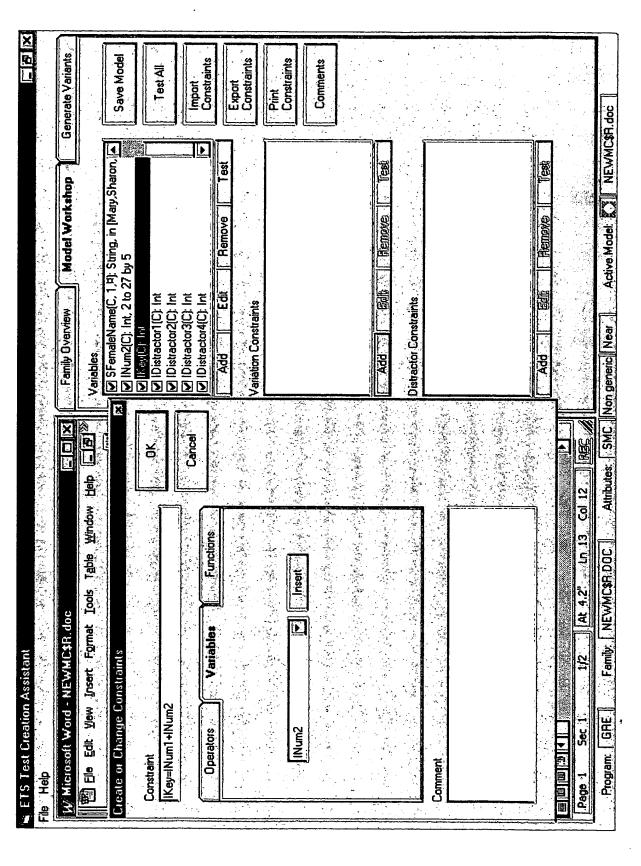


FIG. 36

	Family Dverview Model Workshop Generate Varients	Variables	SFemaleName(C, 1,4), String, in [Mary,Sharon, []	VINUM2(C) Int, 2 to 27 by 5	☑ Distractor1(C): Int ☑ Distractor2(C): Int	Remove   Test	Variation Constraints	☑  Key= Rum1+ Rum2	Constraints	Comments			C. AGG.   Remove   Test	Distractor Constraints				Control Control Balling   Bernave   Theat	
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FIG. 37

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FIG. 38

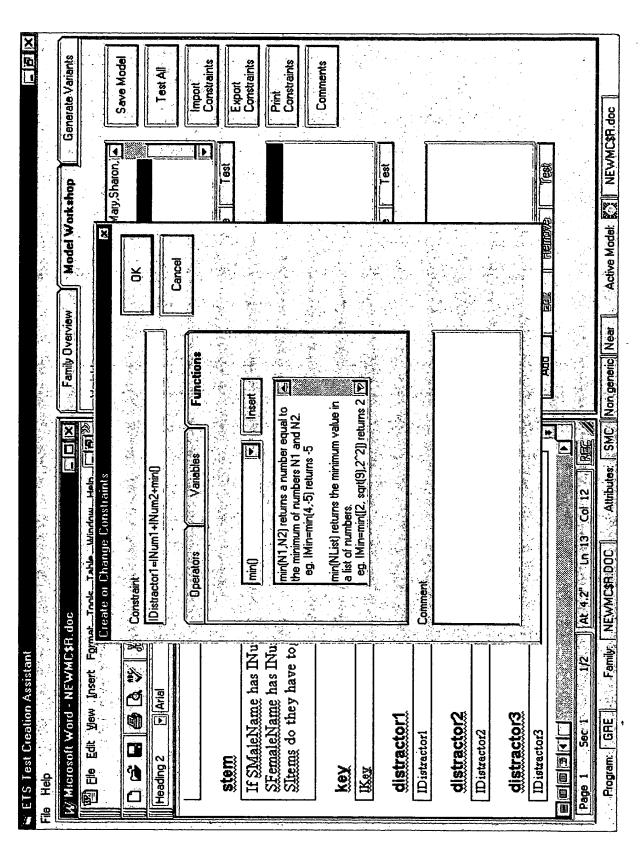


FIG. 39

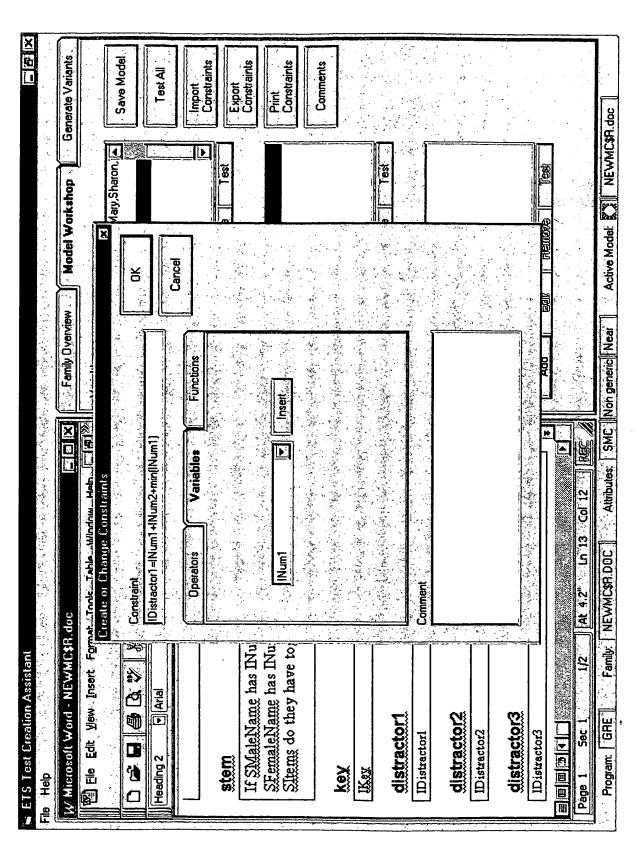


FIG. 40

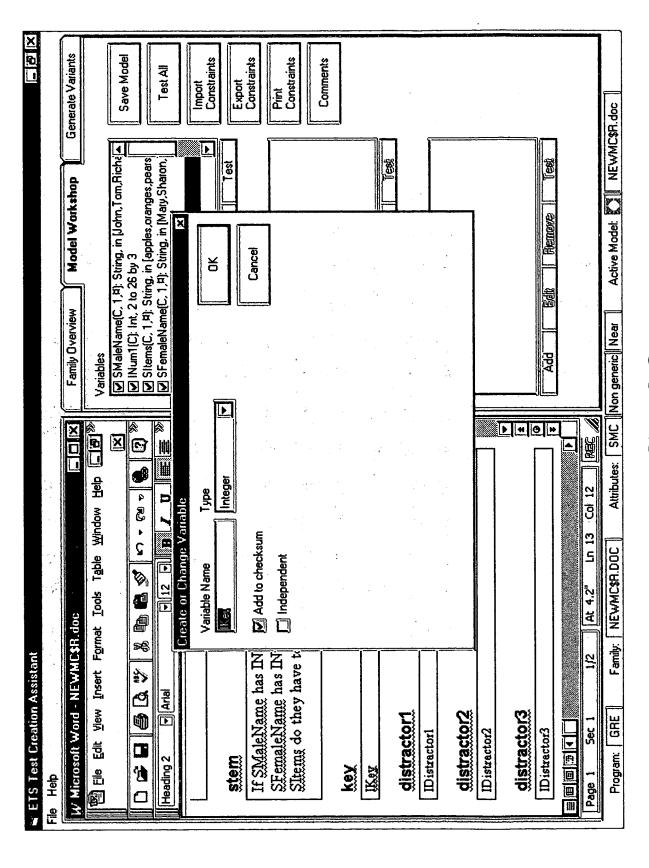


FIG. 28

	Family Overview Model Workshop Generate Variants	Variables	SemaleName(C, 1,4): String, in [Mary,Sharon,i]	☑ Ilk evil©i. Int ☑ IDistractor1(C): Int	✓ IDistractor2(L): Int ✓ IDistractor3(C): Int ✓ IDistractor4(C): Int	Remove   Test	Variation Constraints Print	Constraints			C. Add. 1 Edit   Remove   Test	Click here to add a variation constraint.				Add   Edlis   Remove   Test		Non-generic   Near     Active Model:
≅. E1S Test Creation Assistant File Help	W Microsoft Word - NEWMC\$R.doc					stem	If SMaleName has INum! Sitems and StemaleName has INum? Sitems, how many	Sitems do they have together?	Kex	lKex.	distractor1	Distractor1	distractor2	IDistractor2	distractor3	Distractor3		nam:   GRE    Family:   NEW/MC\$R.DOC    Attributes:   SMC

FIG. 29

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	Comment			
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FIG. 30

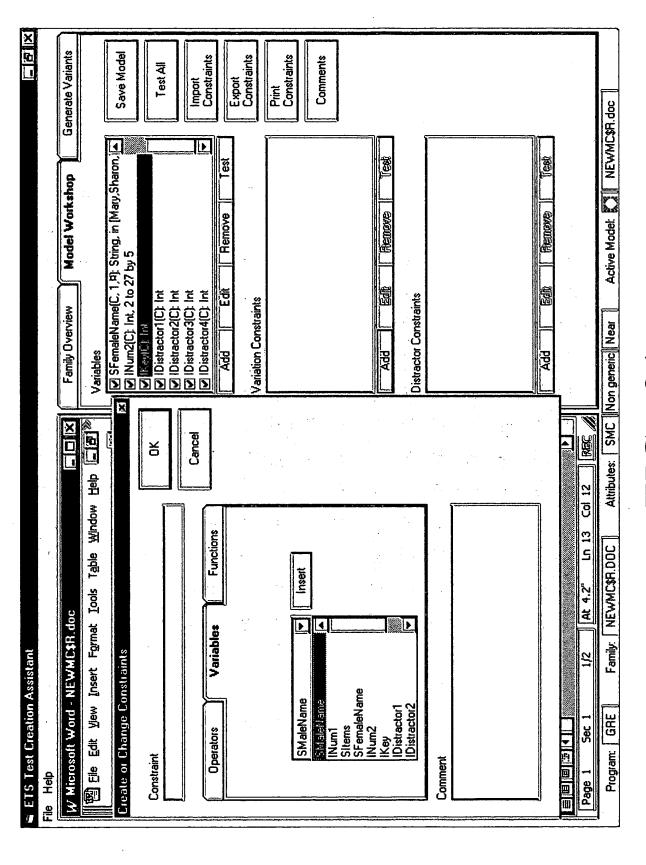


FIG. 31

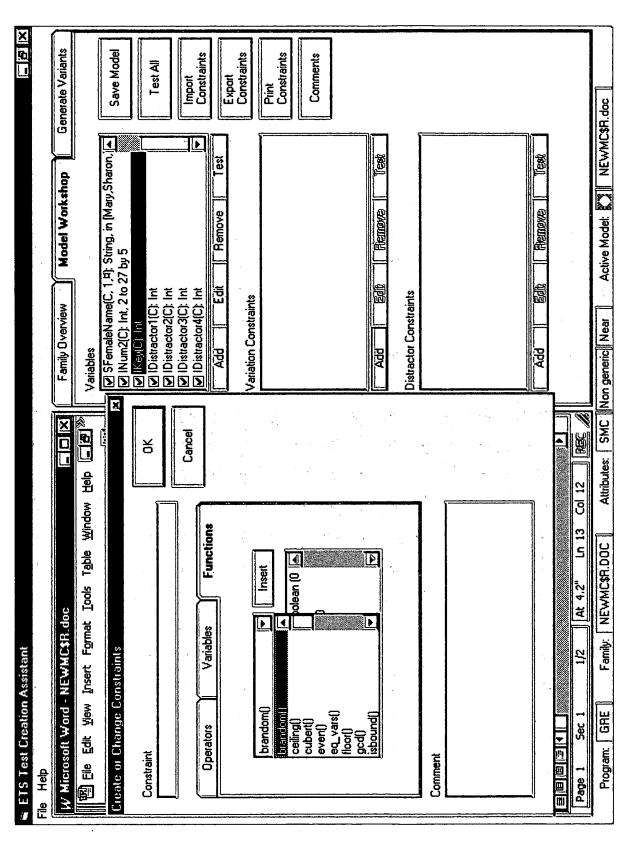


FIG. 32

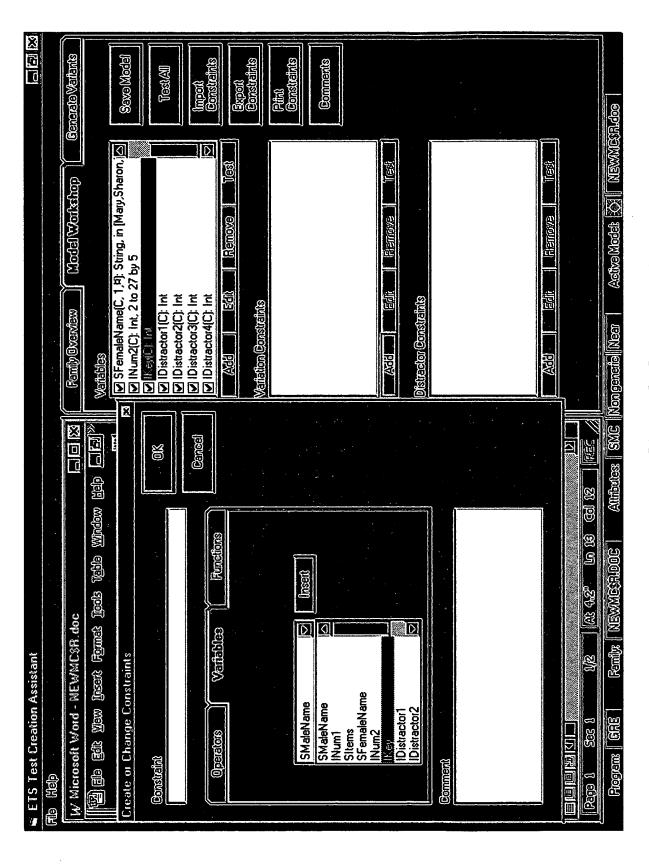


FIG. 33

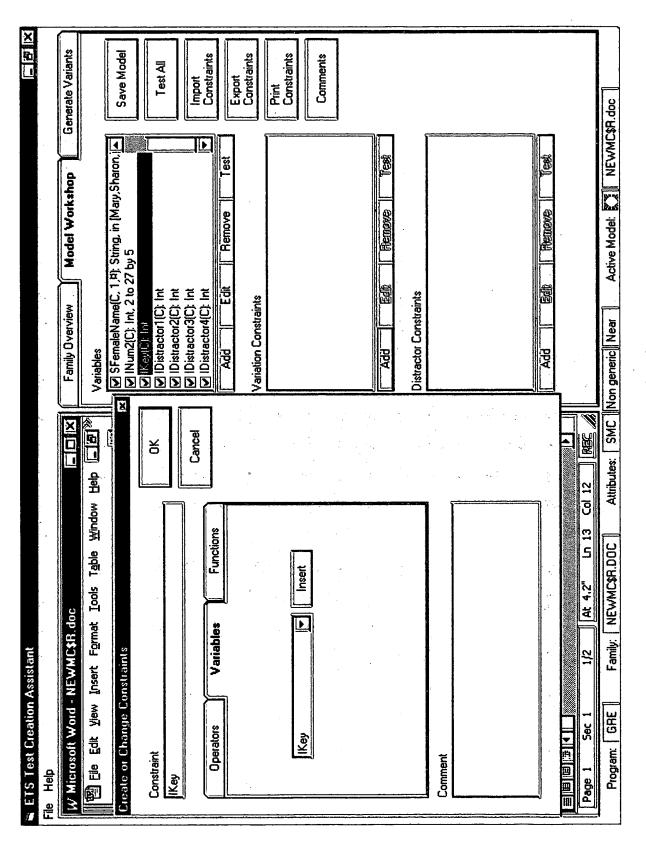


FIG. 34

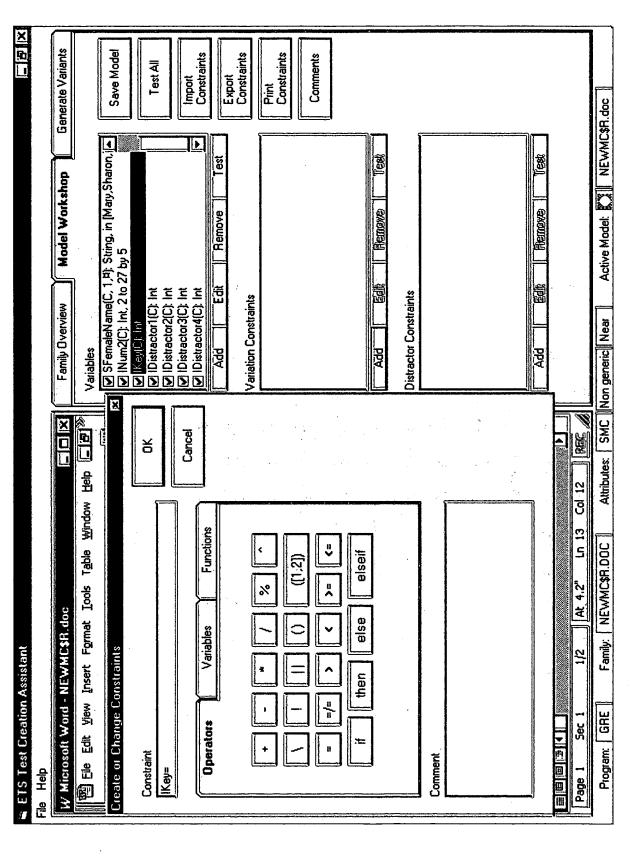


FIG. 35

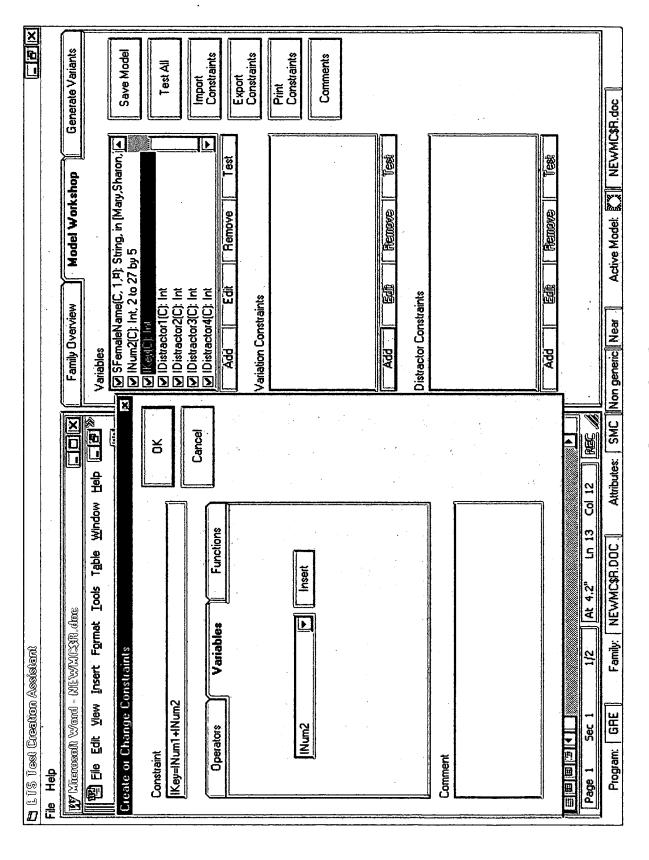


FIG. 36

	Family Overview Model Workshop Generate Variants	Variables				Constraints   Constraints	Variation Constraints	Mikey=INum1+INum2   Print   Constraints	Comments			Edit Remove Test	Distractor Constraints				Add   Bdf   Remove   Test	
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FIG. 37

E. ETS Test Creation Assistant	XI A C
File Help	
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	Variables
	SFemaleName(C, 1,4): String, in [Mary,Sharon,i]
	☑ INum2(C): Int, 2 to 27 by 5
	☑ IDistractor1(C): Int ☑ IDistractor2(C): Int
	V   Distractor3(C) Int
stem	Remove Test
If SMaleName has INum1 SItems and	Variation Constraints
	m2
Sitems do they have together?	Constraints
	Comments
Key	
IKey	
distractor1	( Add   Edit   Remove   Test
IDistractor1	Distractor Constraints
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IDistractor2	
distractor3	
IDistractor3	Add   Edit   Remove   Test
<b> 파                                  </b>	PER Click here to add a distractor constraint.
Program:   GRE   Family:   NEWMC\$R.DOC   Attributes:   SMC	SMC   Non generic   Near    Active Model: [\$, 3]   NEW/MC\$R.doc

FIG. 38

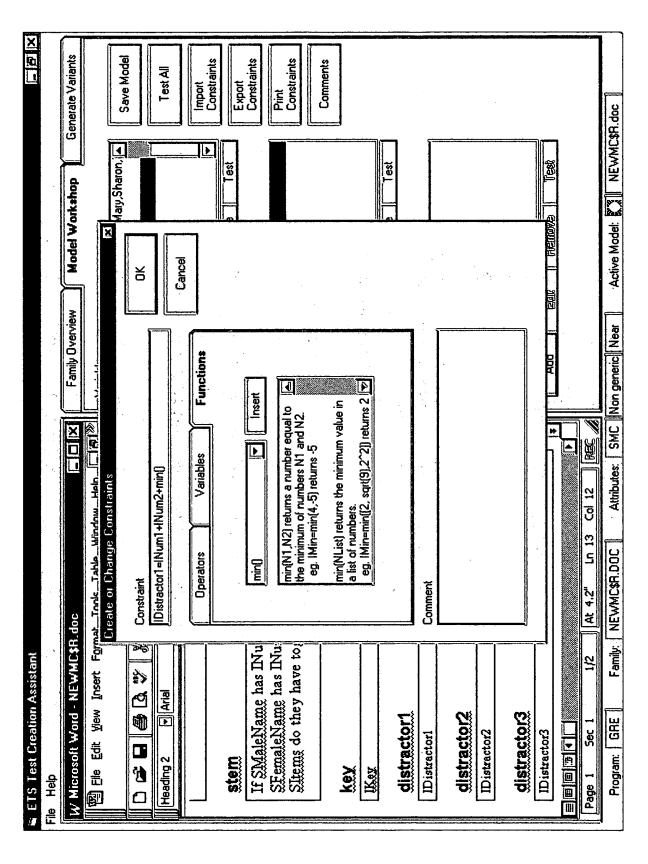


FIG. 39

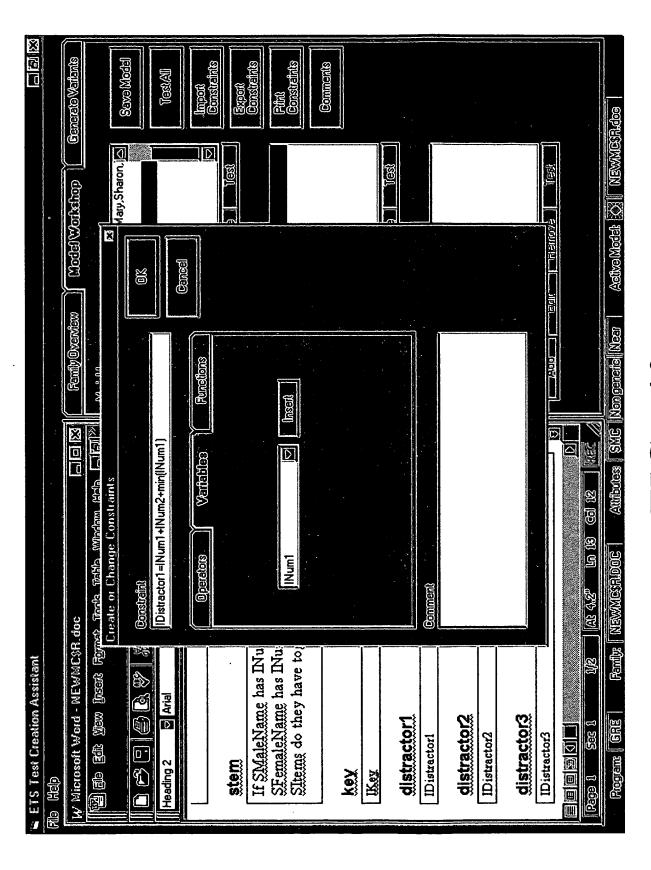


FIG. 40

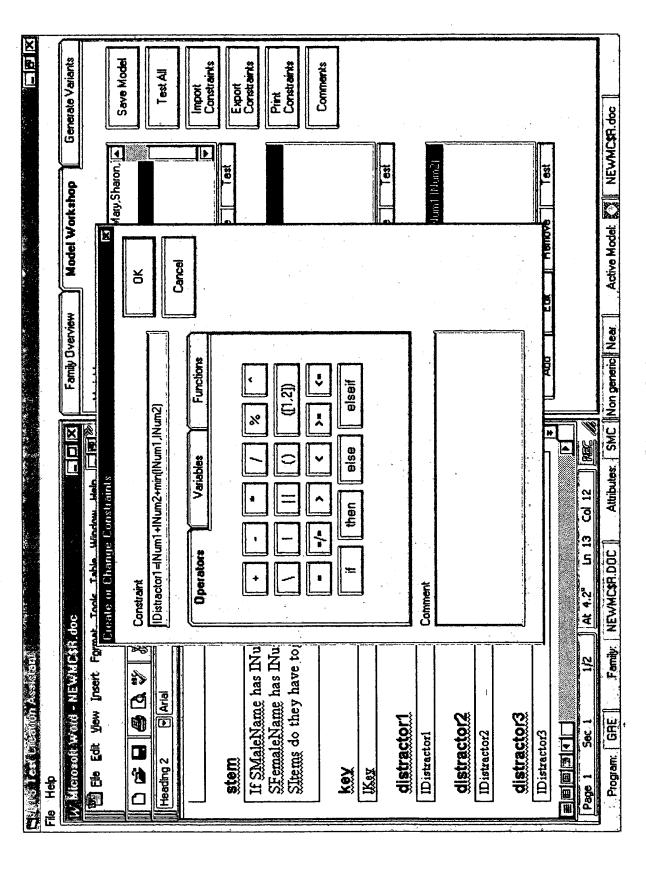


FIG. 41

► ETS Test Creation Assistant	
File Help	
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	S FemaleName(C, 1,4): String, in [Mary,Sharon, ]►
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GHE Family: NEWMC\$R.DOC Attributes:	SMC Non generic Near Active Model: W NEWMC\$R.doc
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FIG. 42

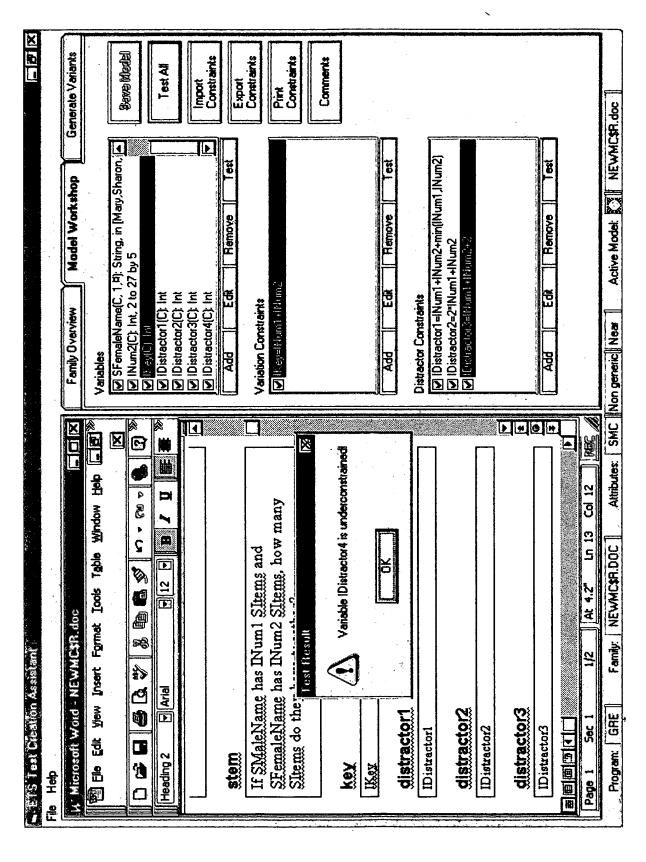


FIG. 43

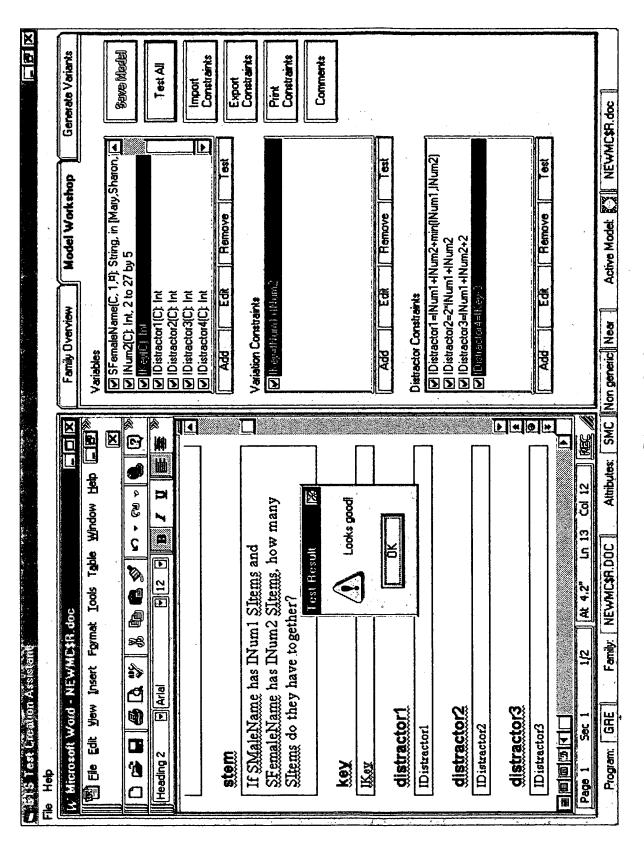
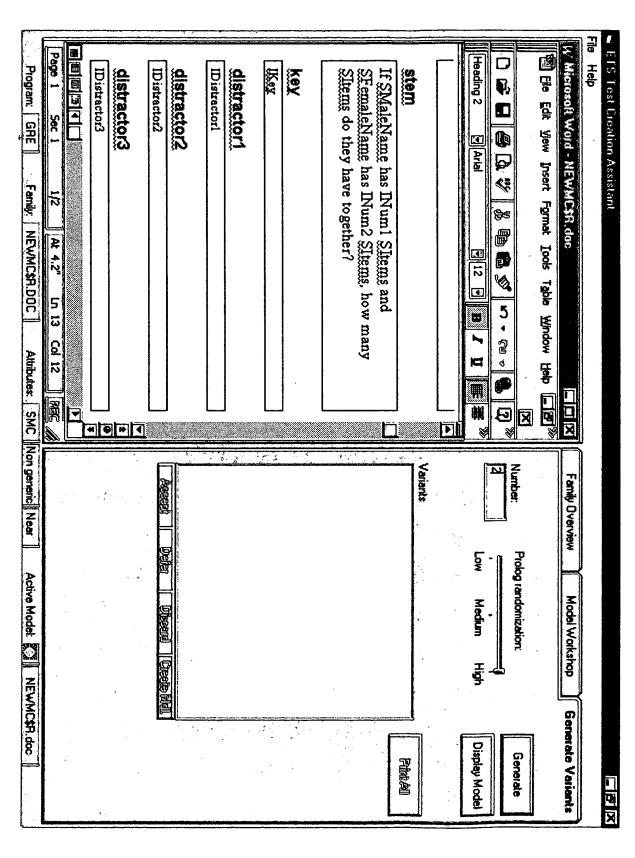
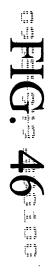


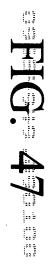
FIG. 44

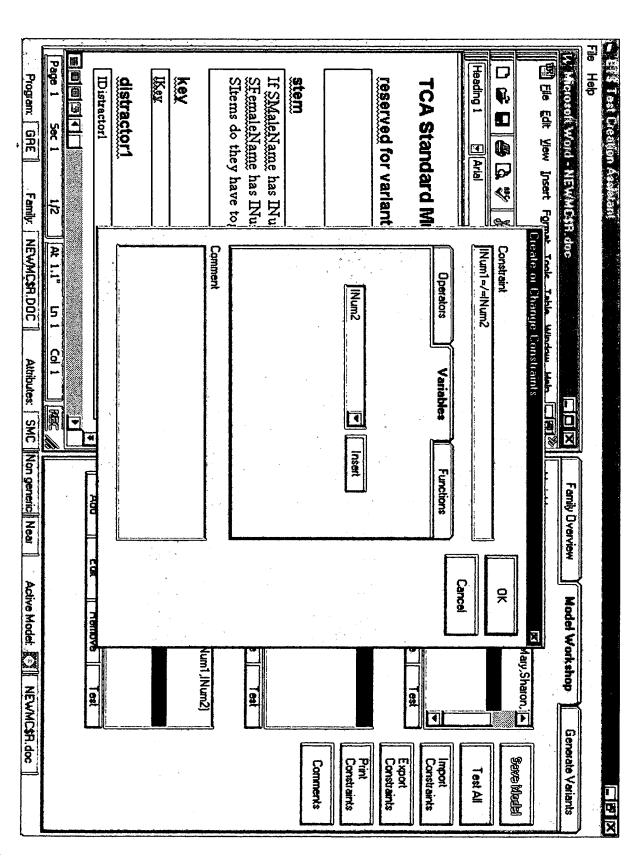






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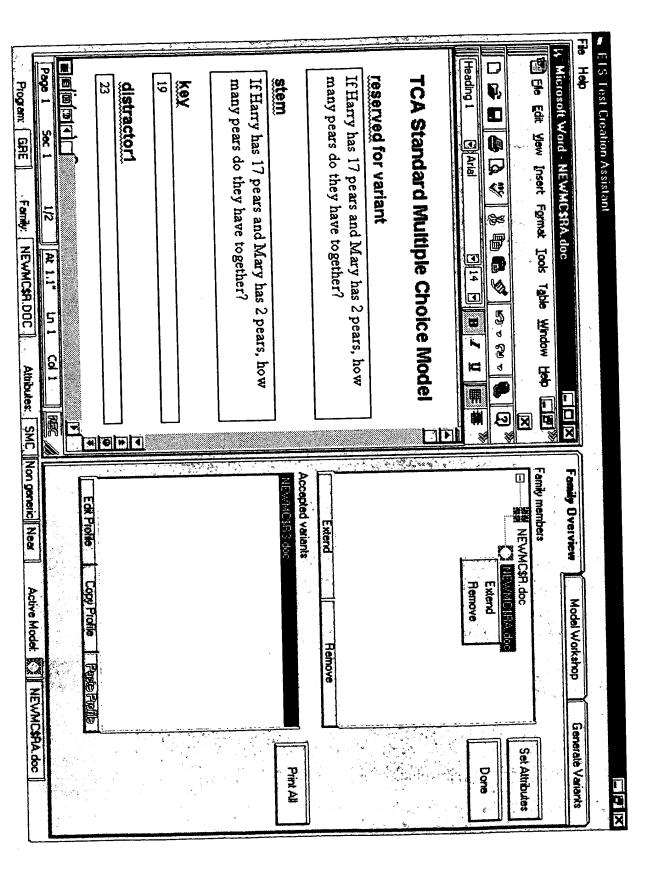
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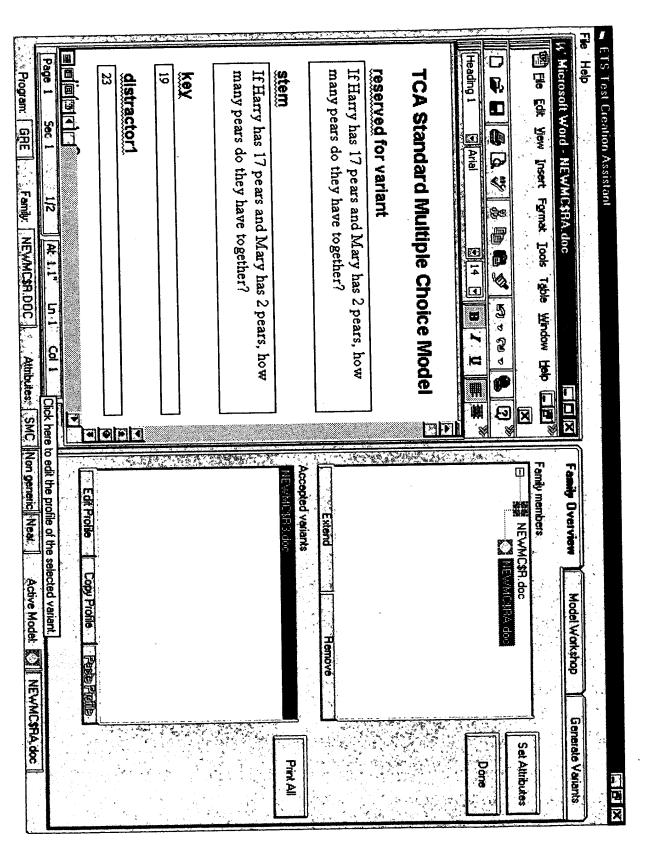
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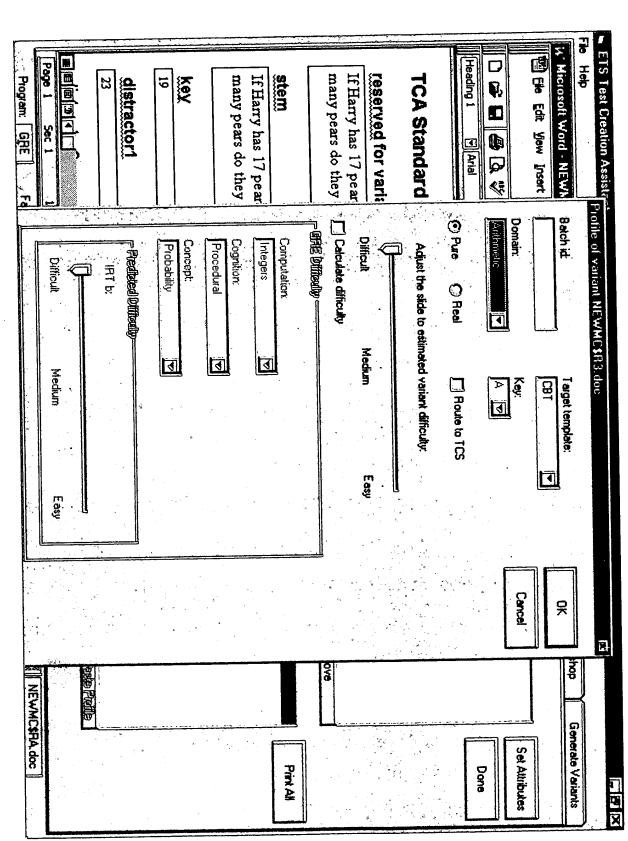


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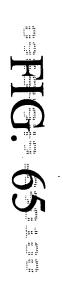


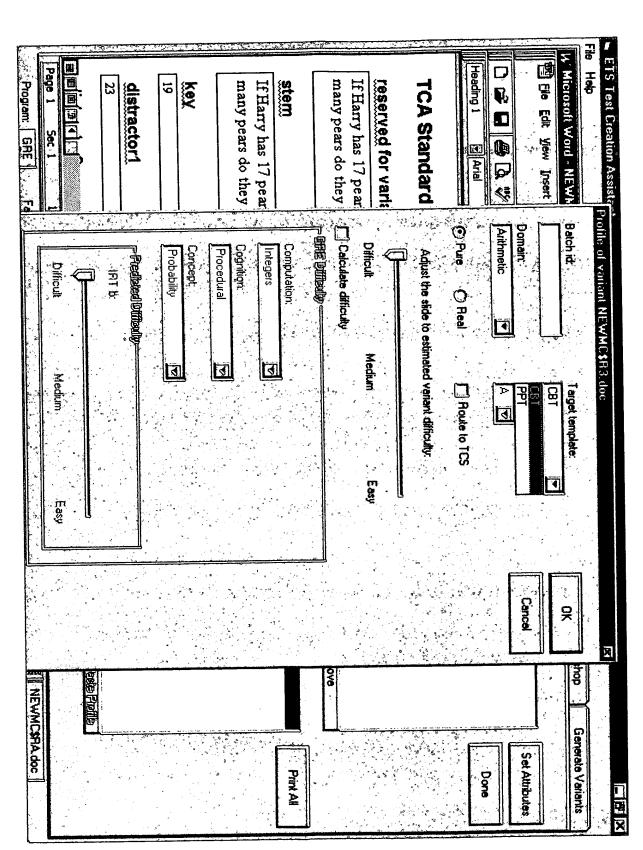






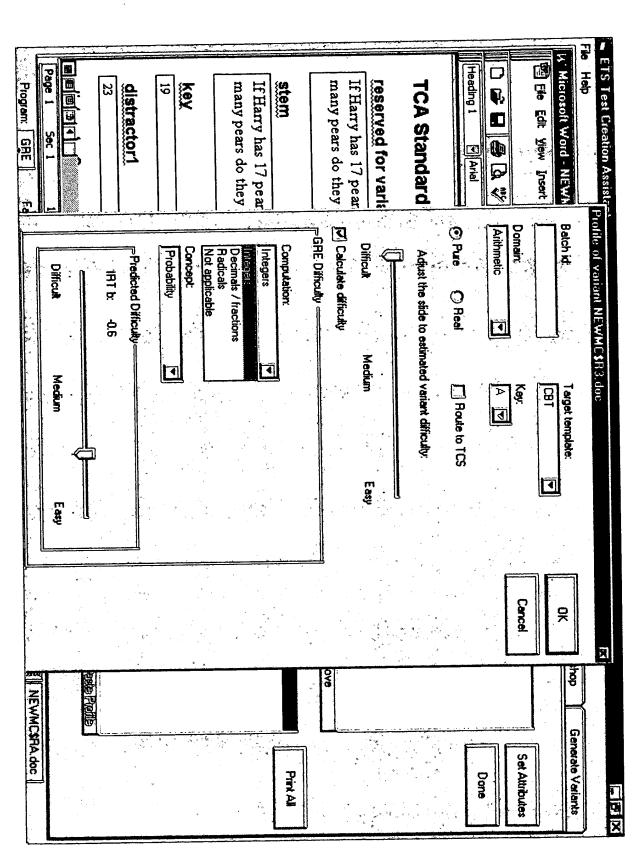
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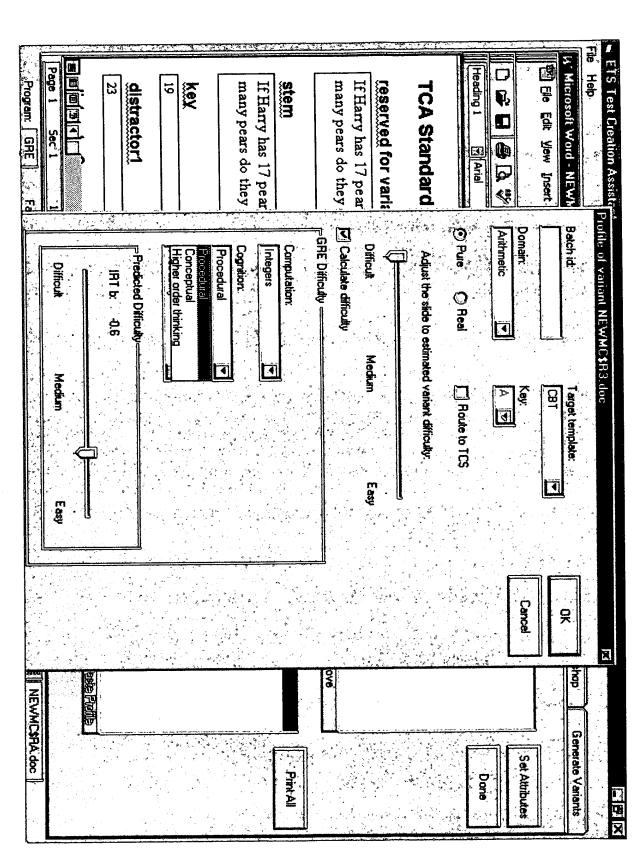




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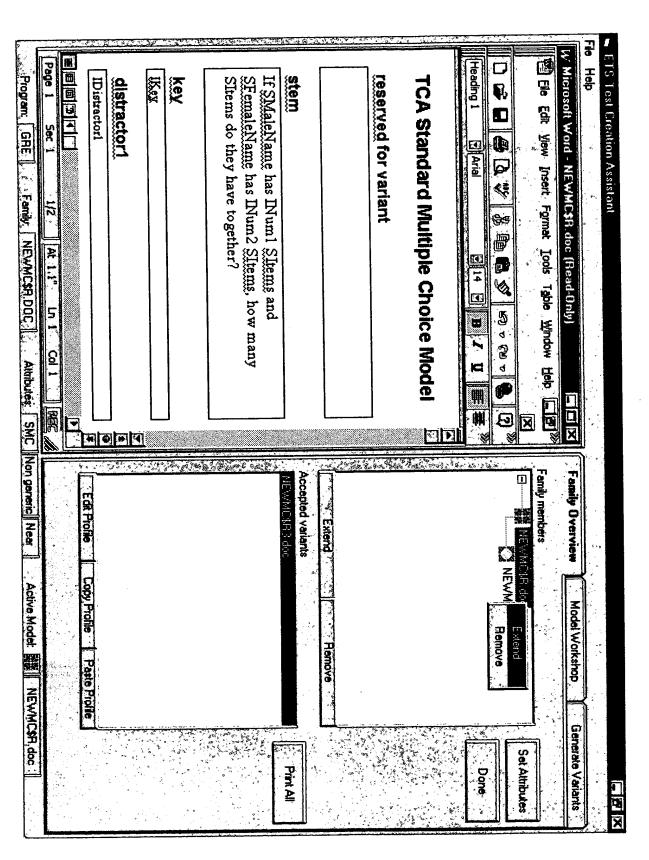




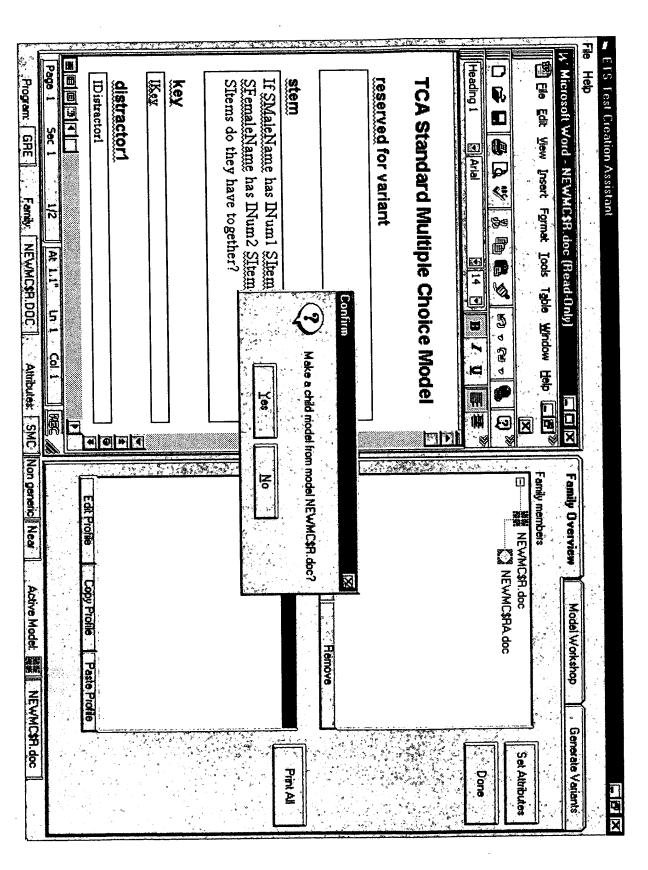


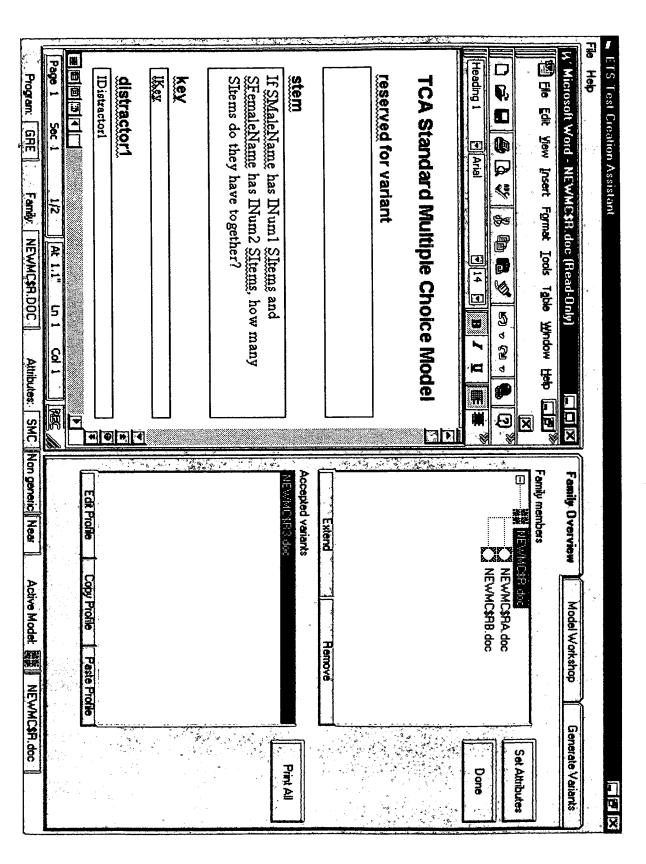


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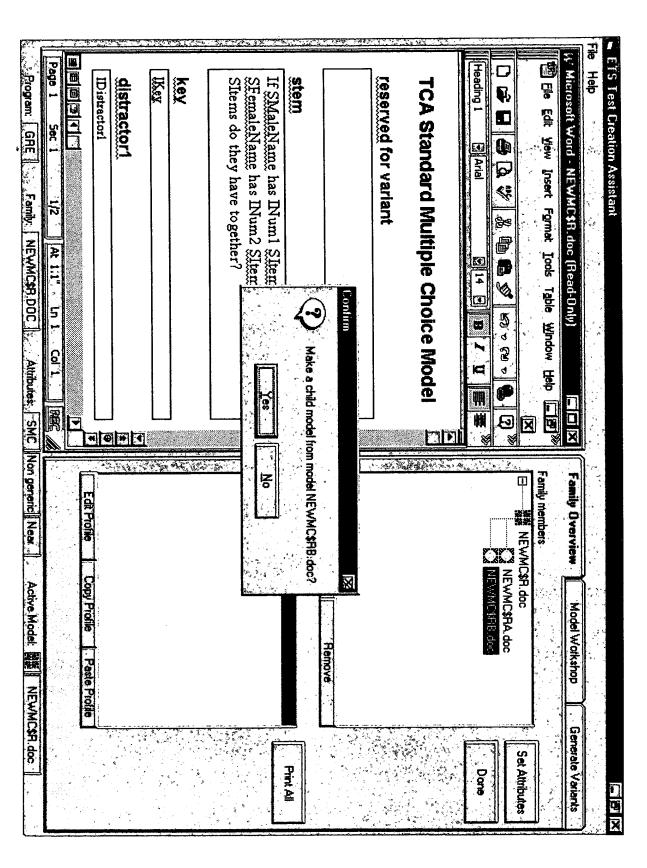
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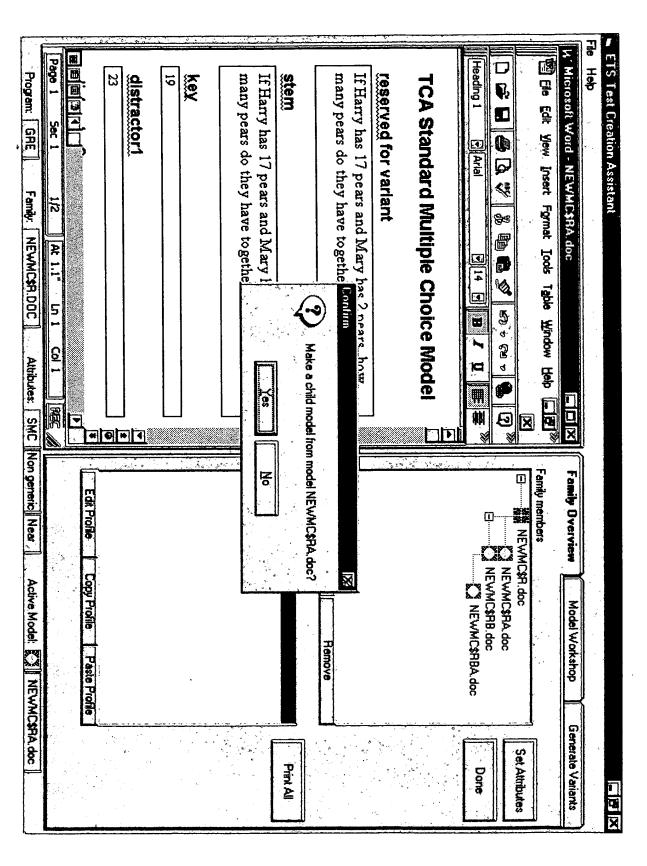
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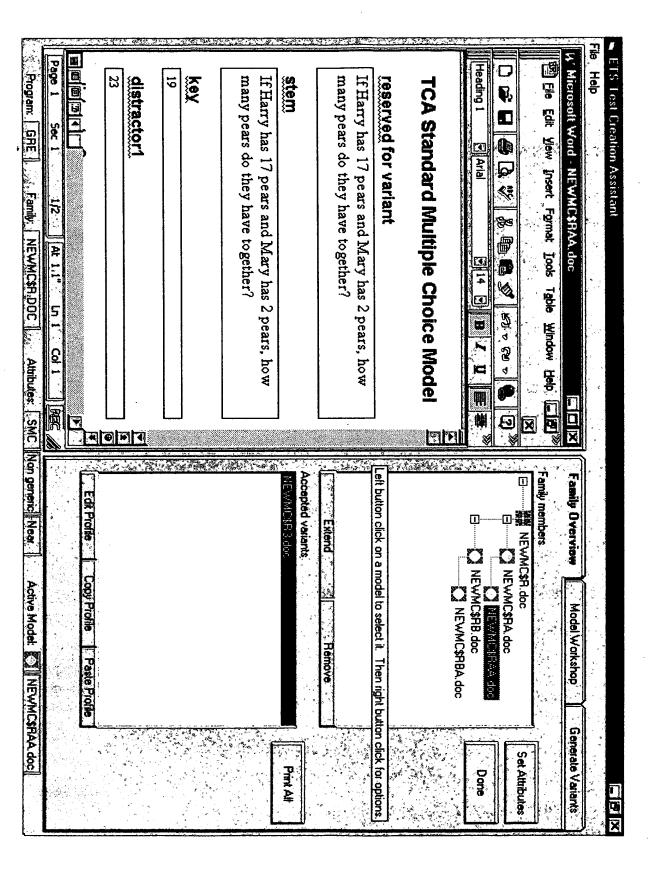




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	IX.ey.
	key
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#### Variables and constraints for model NEWMC\$R

```
Variables:
  Variable name: SMaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       John
      Tom
       Richard
       Michael
       Steve
       Phil
       Jeff
       Peter
       Harry
  Variable name: INum1
   ीType: Integer
   Status: Enabled
   Checksum: Enabled
   Is independent = True, Range: from 2 to 26 by 3
  Variable name: Sitems
   Type: String
   Status: Enabled
   Checksum: Enabled
   # Indexed: False
   ■Values:
   apples
   oranges
   == pears
    marbles
    pennies
       comic books
       pieces of bubble gum
       pencils
       crayons
  Variable name: SFemaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       Mary
       Sharon
       Tina
       Michelle
```

#### Variables and constraints for model NEWMC\$R

Susan Linda Crystal Deidre Variable name: INum2 Type: Integer Status: Enabled Checksum: Enabled Is independent = True, Range: from 2 to 27 by 5 Variable name: IKey Type: Integer Status: Enabled Checksum: Enabled Is independent = False Variable name: IDistractor1 Type: Integer Status: Enabled Checksum: Enabled is independent = False Variable name: IDistractor2 Type: Integer Status: Enabled Checksum: Enabled is independent = False Variable name: IDistractor3 Type: Integer Status: Enabled Checksum: Enabled Is independent = False Variable name: IDistractor4 Type: Integer Status: Enabled Checksum: Enabled Is independent = False Constraints: Variation constraints: Constraint: IKev=INum1+INum2 Status: Enabled Constraint: INum1=/=INum2 Status: Enabled Distractor constraints:

Status: Enabled

Constraint: IDistractor3=INum1+INum2+7

Constraint: IDistractor2=2\*INum1+INum2

Constraint: IDistractor1=INum1+INum2+2\*min(INum1,INum2)

#### Variables and constraints for model NEWMC\$R

Status: Enabled

Constraint: IDistractor4=IKey-3 Status: Enabled

Wine, affine Wine, offices than their thing II II to their to the second second second second



#### Variables and constraints for model NEWMC\$RA

```
Variables:
  Variable name: SMaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
      John
      Tom
      Richard
      Michael
      Steve
      Phil
      Jeff
      Peter
      Harry
  Variable name: INum1
   ₫Status: Enabled
   Checksum: Enabled
   is independent = True, Range: from 2 to 26 by 3
  Variable name: SItems
   #Type: String
   Status: Enabled
   . Checksum: Enabled
   gindexed: False
   ...Values:
   apples
   oranges
   pears
      marbles
       pennies
       comic books
       pieces of bubble gum
       pencils
       crayons
  Variable name: SFemaleName
     Type: String
     Status: Enabled
     Checksum: Enabled
     Indexed: False
     Values:
       Mary
       Sharon
       Tina
       Michelle
```

#### Variables and constraints for model NEWMC\$RA

Susan Linda Crystal Deidre

Variable name: INum2 Type: Integer Status: Enabled Checksum: Enabled

Is independent = True, Range: from 2 to 27 by 5

Variable name: IKey
Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor1

Type: Integer

Status: Enabled

Checksum: Enabled

Its independent = False

Variable name: IDistractor2

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor3

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor4

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False

Constraints:

Variation constraints:

Constraint: IKey=INum1+INum2

Status: Enabled

Constraint: INum1=/=INum2

Status: Enabled Distractor constraints:

Constraint: IDistractor1=INum1+INum2+2\*min(INum1,INum2)

Status: Enabled

Constraint: IDistractor2=2\*INum1+INum2

Status: Enabled

Constraint: IDistractor3=INum1+INum2+7

# Variables and constraints for model NEWMC\$RA

Status: Enabled Constraint: IDistractor4=IKey-3 Status: Enabled

# FILE: NEWMC\$R.doc

# **TCA Standard Multiple Choice Model**

eserved for variant	
	• -
stem	
f SMaleName has INum1 SItems and	
SFemaleName has INum2 SItems, how ma	any
Sitems do they have together?	
cey	
Key	
distractor1	
Distractor1	
distractor2	
Distractor2	
distractor3	
Distractor3	
distractor4	
Distractor4	
distractor5	
Distractor5	
distractor6	
Distractor6	
distractor7	
Distractor7	
distractor8	
Distractor8	

FIG. 83

Scratch Pad Area

## FILE: NEWMC\$R3.doc

# **TCA Standard Multiple Choice Model**

#### reserved for variant

If Tom has 2 comic books and Crystal has 12 comic books, how many comic books do they have together?

#### stem

If Tom has 2 comic books and Crystal has 12 comic books, how many comic books do they have together?

# key 14 distractor1 18 distractor2

### distractor3

21

#### distractor4

11

#### distractor5

Distractor5

#### distractor6

Distractor6

#### distractor7

Distractor7

#### distractor8

Distractor8

#### scratch pad

Scratch Pad Area

FIG. 84

## FILE: NEWMC\$R4.doc

# **TCA Standard Multiple Choice Model**

#### reserved for variant

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

#### stem

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

#### key

19

#### distractor1

23

#### distractor2

36

#### distractor3

26

#### distractor4

16

#### distractor5

Distractor5

#### distractor6

Distractor6

#### distractor7

Distractor7

#### distractor8

Distractor8

#### scratch pad

Scratch Pad Area

# **TCA Standard Multiple Choice Model**

# reserved for variant

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

# stem

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

# key

19

# distractor1

23

Į)

Hing offices Wiles offices There Wall

41

= 5

# distractor2

36

# distractor3

26

### distractor4

16

# distractor5

Distractor5

# distractor6

Distractor6

# distractor7

Distractor7

# distractor8

Distractor8

# scratch pad

Scratch Pad Area

FIG. 86

# FILE: NEWMC\$RB.doc

# **TCA Standard Multiple Choice Model**

reserved for variant	
stem	
If SMaleName has INum1 SIter	
SFemaleName has INum2 SIter	ns, how many
SItems do they have together?	
key	
IKey	
distractor1	
IDistractor1	
distractor2	
IDistractor2	
distractor3	
IDistractor3	
distractor4	
IDistractor4	
distractor5	
Distractor5	
distractor6	
Distractor6	
distractor7	
Distractor7	
distractor8	
Distractor8	
scratch pad	
Scratch Pad Area	

THE SECTION OF THE STATE AND THE SECTION OF THE SECTION SECTIO

# FILE: NEWMC\$RBA.doc

# **TCA Standard Multiple Choice Model**

stem	
If SMaleName	has INum1 SItems and
	has INum2 SItems, how many
SItems do they	have together?
key	
IKey	
distractor1	
IDistractor1	
distractor2	
IDistractor2	
distractor3	
IDistractor3	
distractor4	
IDistractor4	
distractor5	
Distractor5	
distractor6	
Distractor6	
distractor7	
Distractor7	
distractor8	
Distractor8	
scratch pad	
	<del></del>

FIG. 88

16 TO 16 TO TO TO THE PERSON OF THE STATE OF

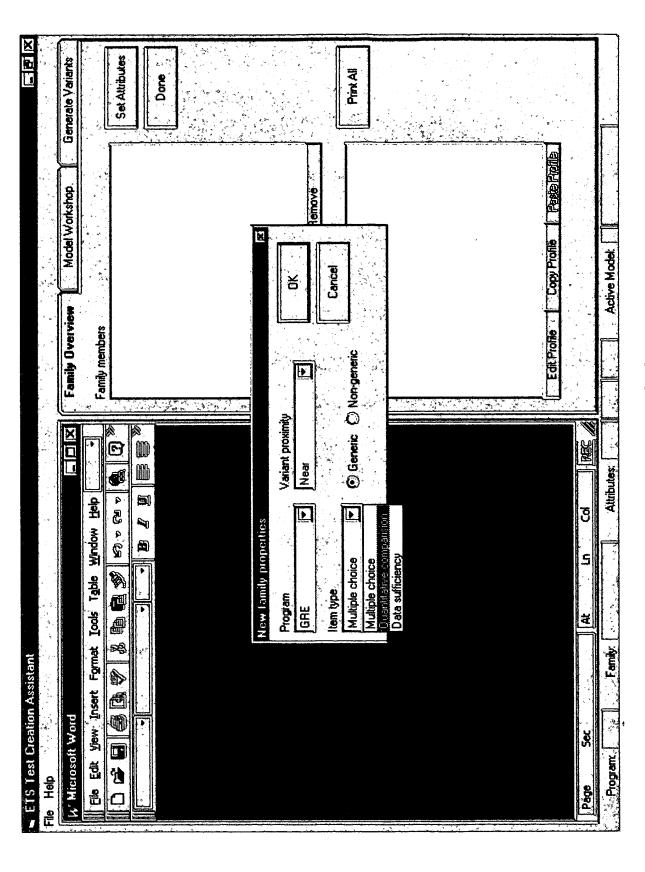


FIG. 89

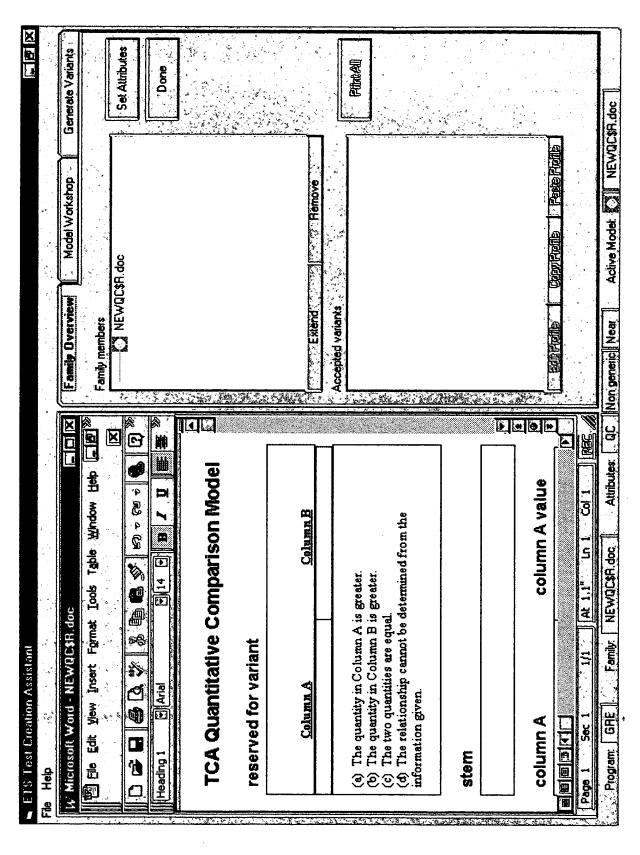


FIG. 90

# FILE: NEWQC\$R.doc

# **TCA Quantitative Comparison Model**

# reserved for variant

Column A	Column B
<ul> <li>(a) The quantity in Column A</li> <li>(b) The quantity in Column B</li> <li>(c) The two quantities are equ</li> <li>(d) The relationship cannot be information given.</li> </ul>	is greater. al.

_		_	-	_
8	т	_		n

# column A column A value

# column B column B value

# key Key

# scratch pad Scratch

# Pad Area

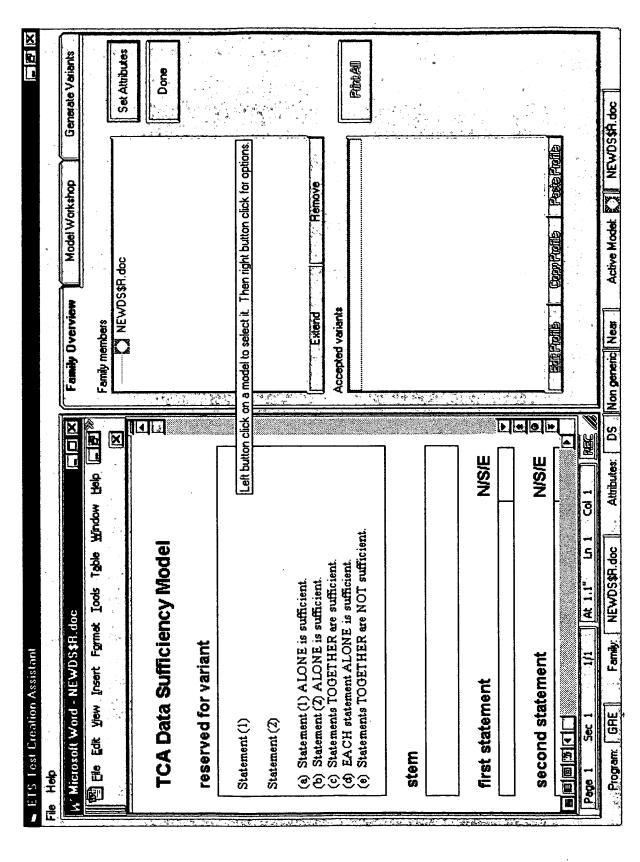


FIG. 92

# 1 Ibelee

# FILE: NEWDS\$R.doc

# **TCA Data Sufficiency Model**

# reserved for variant

Statement (1)

Statement (2)

- (a) Statement (1) ALONE is sufficient.
- (b) Statement (2) ALONE is sufficient.
- (c) Statements TOGETHER are sufficient.
- (d) EACH statement ALONE is sufficient.
- (e) Statements TOGETHER are NOT sufficient.

_	 	

scratch pad

Scratch Pad Area

# first statement N/S/E second statement N/S/E key Key

# THE RESERVED TO THE STATE OF TH

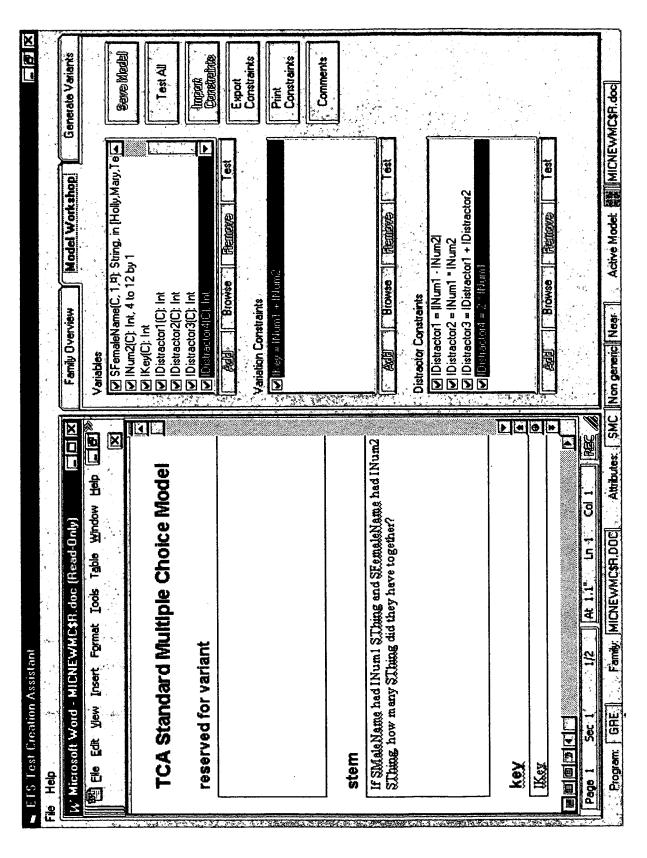


FIG. 94

# FILE: MICNEWMC\$R1.doc

# **TCA Standard Multiple Choice Model**

# reserved for variant

If Bill had 2 apples and Teresa had 5 apples, how many apples did they have together?

A. 3

B. 4

C. 7

D. 10

E. 13

# stem

Key is C

If Bill had 2 apples and Teresa had 5 apples, how many apples did they have together?

# key

7

# distractor1

3

# distractor2

10

# distractor3

13

# distractor4

4

# distractor5

Distractor5

# distractor6

Distractor6

# distractor7

Distractor7

### distractor8

Distractor8

# scratch pad

Scratch Pad Area

FIG. 95

I THE HEAD WAS THE THE THE THE SECOND THE SE

# FILE: MICNEWMC\$RA.doc

# **TCA Standard Multiple Choice Model**

# reserved for variant

Hen often Ben often Jan Hall Him H. H.

, , , , , , , , , , , , , , , , , , , ,
If Bill had 2 apples and Joan had 4 apples, how many apples did they
have together?
A. 2
B. 4
C. 6
D. 8
E. 10
Key is C
stem
If Bill had 2 apples and Joan had 4 apples, how many apples did they
have together?
key
6
distractor1
2
2
distractor2
8
distractor3
10
distractor4
4
distractor5
Distractor5
distractor6
Distractor6
distractor7
Distractor7
distractor8
Distractors
Distractor8

FIG. 96

scratch pad Scratch Pad Area FILE:

MICNEWMC\$R2.doc

# **TCA Standard Multiple Choice Model**

# reserved for variant

If Bill had 2 apples and Joan had 4 apples, how many apples did they
have together?
A. 2
B. 4
C. 6
D. 8
E. 10

# stem

distractor7

Key is C

If Bill had 2 apples and Joan had 4 apples, how many apples did they have together?

# **key** 6

# distractor1 2

# distractor2

# distractor3

4			

# distractor5 Distractor5

# Distractor3

# distractor6 Distractor6

D: 4 7		
Distractor7		

# distractor8

# Distractor8

# Scratch Pad Area

FIG. 97

# Variables and constraints for model MICNEWMC\$R

```
Variables:
  Variable name: SMaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       Michael
       Bill
       Harry
       Roger
  Variable name: INum1
    Type: Integer
    Status: Enabled
    Checksum: Enabled
    Is independent = True, Range: from 2 to 8 by 1
  Variable name: SThing
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Walues:
    # apples
    uzis
  Variable name: SFemaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
    ☐ Holly
       Mary
       Teresa
       Joan
  Variable name: INum2
    Type: Integer
    Status: Enabled
    Checksum: Enabled
    Is independent = True, Range: from 4 to 12 by 1
  Variable name: IKey
    Type: Integer
    Status: Enabled
    Checksum: Enabled
     Is independent = False
  Variable name: IDistractor1
    Type: Integer
```

# Variables and constraints for model MICNEWMC\$R

Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor2

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor3

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor4

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False

# Constraints:

Variation constraints:

Constraint: IKey = INum1 + INum2

Status: Enabled Distractor constraints:

Gonstraint: IDistractor1 = |INum1 - INum2|

s Status: Enabled

Constraint: IDistractor2 = INum1 \* INum2

Status: Enabled

Gonstraint: IDistractor3 = IDistractor1 + IDistractor2

Status: Enabled

Constraint: IDistractor4 = 2 \* INum1

Status: Enabled

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ETS Test Creation Assistant  Help	ssoft Word - MICNEWQC\$	쫻 File Edit Ylew Insert Format	TCA Quantitative Comparison Mode	reserved for variant	Column A	<ul> <li>(a) The quantity in Column A is greater.</li> <li>(b) The quantity in Column B is greater.</li> <li>(c) The two quantities are equal.</li> <li>(d) The relationship cannot be determine given.</li> </ul>	stem An article of clothing was reduced in price by x percent from \$!QriginalPrice to \$!ReducedPrice. Later, the price was incre y percent to return the price to \$!QriginalPrice.	column A  x  i i i i i i i i i i i i i i i i i i

FIG. 99

# The state of the s

# FILE: MICNEWQC\$R.doc

# **TCA Quantitative Comparison Model**

# reserved for variant

# (a) The quantity in Column A is greater. (b) The quantity in Column B is greater. (c) The two quantities are equal. (d) The relationship cannot be determined from the information given.

### stem

An article of clothing was reduced in price by x percent from \$IOriginalPrice to \$IReducedPrice. Later, the price was increased by y percent to return the price to \$IOriginalPrice.

column A	column B
x	у
x + 1	y - 1

# key

Key

# scratch pad

Scratch Pad Area

# FIG. 100

# FILE: MICNEWQC\$R1.doc

# **TCA Quantitative Comparison Model**

# reserved for variant

An article of clothing was reduced in price by x percent from \$20 to \$16. Later, the price was increased by y percent to return the price to \$20

Column A Column B

x + 1

- y 1
- (a) The quantity in Column A is greater.
- (b) The quantity in Column B is greater.
- (c) The two quantities are equal.
- (d) The relationship cannot be determined from the information given.

### stem

An article of clothing was reduced in price by x percent from \$20 to \$16. Later, the price was increased by y percent to return the price to \$20.

# column A

# column B

x	у
x + 1	y - 1

# key

Key

# scratch pad

Scratch

Pad

Area

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# FILE: MICNEWQC\$R5.doc

# **TCA Quantitative Comparison Model**

# reserved for variant

An article of clothing was reduced in price by x percent from \$25 to \$20. Later, the price was increased by y percent to return the price to \$25.

Column A

x + 1

Column B

- (a) The quantity in Column A is greater.
- (b) The quantity in Column B is greater.
- (c) The two quantities are equal.
- (d) The relationship cannot be determined from the information given.

### stem

An article of clothing was reduced in price by x percent from \$25 to \$20. Later, the price was increased by y percent to return the price to \$25.

# column A

# column B

X	у
x + 1	y - 1

# key

Key

# scratch pad

Scratch

Pad

Area

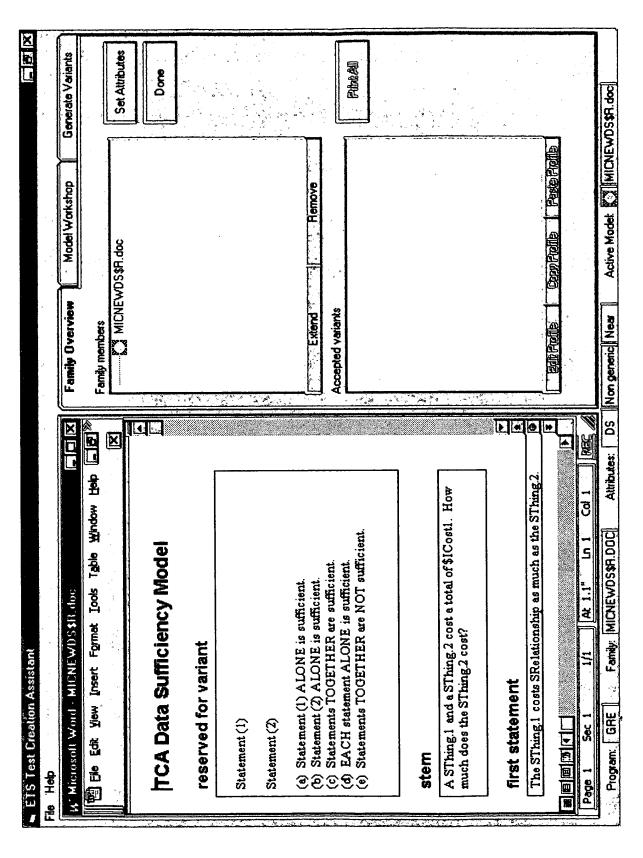


FIG. 103

Help	
14' Microsoft Word - MICNEWDS\$R.doc	Family Overview   Model Workshop Generate Variants
WE Bite Edit Yew Insert Format Iooks Table Window Help ( 12)	Variables
×	String(c, 2,4); String, in [apples4cranges,hat4coa
TCA Data Sufficiency Model	☑ ICost2(C): Int ☑ ITotalCost(C): Int, 40 to SVal by 1 ☑ SVal(C 1 B): String in [50 55 60 1
reserved for variant	Shelationship(L, 1,8), Stang, in [halt, twee, one que   Import   Constraints
Statement (1)	Add Edit Hemove Test Export Constraints
Statement (2)	Variation Constraints  ☑ ITotalCost = ICost1 + ICost2
(a) Statement (1) ALONE is sufficient. (b) Statement (2) ALONE is sufficient. (c) Statements TOGETHER are sufficient. (d) EACH statement ALONE is sufficient. (e) Statements TOGETHER are NOT sufficient.	Constraints Comments
	Add   Edit   Remove   Test
stem	
A SThing.1 and a SThing.2 cost a total of \$1Cost1. How much does the SThing.2 cost?	
first statement	
The SThing 1 costs SRelationship as much as the SThing 2.	
Page 1 Sec 1 1/1 At 1.1" In 1 Col 1 REE	
Program [GRE] Family: MICNEWDS\$R.DOC] Attributes: [DS   I	Non generic   Near   Active Model       MICNEWDS\$R.doc

FIG. 104

# ΓCA Data

# FILE: MICNEWDS\$R.doc

# **TCA Data Sufficiency Model**

# reserved for variant

Statement (1)

Statement (2)

- (a) Statement (1) ALONE is sufficient.
- (b) Statement (2) ALONE is sufficient.
- (c) Statements TOGETHER are sufficient.
- (d) EACH statement ALONE is sufficient.
- (e) Statements TOGETHER are NOT sufficient.

### stem

A SThing.1 and a SThing.2 cost a total of \$ICost1. How much does the SThing.2 cost?

# first statement

The SThing.1 costs SRelationship as much as the SThing.2.

# second statement

The SThing.1 costs \$ICost2.

# key

Key

# scratch pad

Scratch

Pad Area

FIG. 105

# Variables and constraints for model MICNEWDS\$R

```
Variables:
  Variable name: SThing
    Type: String
    Status: Enabled
    Checksum: Disabled
    Indexed: True
    Value Sets:
       Values:
          1. apples
          2. oranges
       Values:
          1. hat
          2. coat
  Variable name: ICost1
    Type: Integer
    Status: Enabled
    Checksum: Enabled
    Is independent = False
  Variable name: ICost2
    Type: Integer
    Status: Enabled
    Checksum: Enabled
     independent = False
  Variable name: ITotalCost
    Type: Integer
    Status: Enabled
    Checksum: Enabled
     ର୍ଛି independent = True, Range: from 40 to SVal by 1
  Variable name: SVal
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       50
       55
       60
       65
  Variable name: SRelationship
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       half
       twice
```

# Variables and constraints for model MICNEWDS\$R

one quarter three times

Constraints:

Variation constraints:

Constraint: ITotalCost = ICost1 + ICost2

Status: Enabled

Constraint: ICost1 = ITotalCost - 20

Status: Enabled

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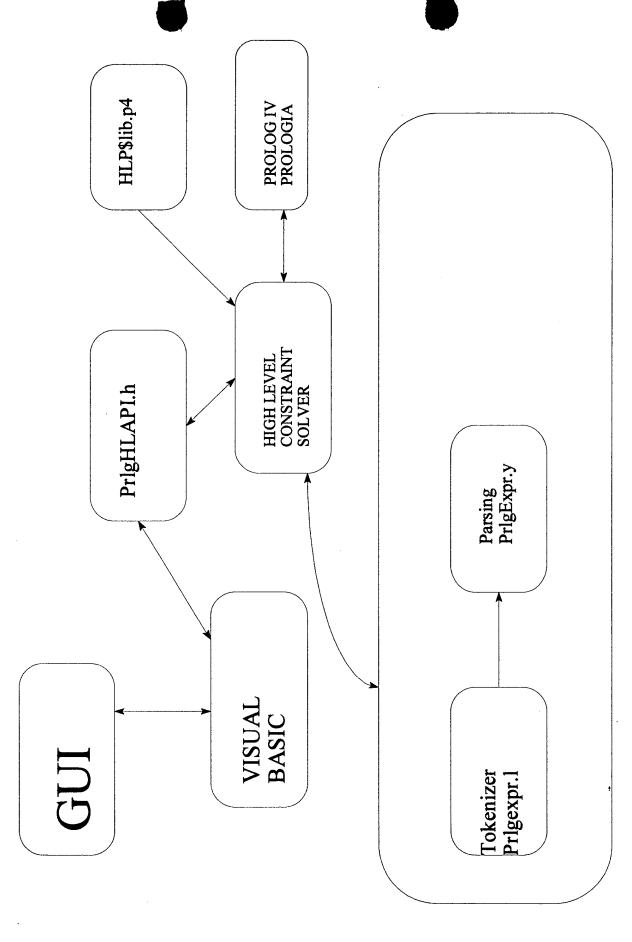


FIG. 107